

MC Series Tractors
Service Manual SM 8-11102

Section Pub. No.

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NOTE: For Service and Overhaul procedures refer to your Engine Service Manual SM 8-10041.

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There is a large selection of McCormick tractor models available for vastly differing applications. This Service Manual may include some information, illustrations and photographs, which may differ to the standard equipment and accessories on your tractor.

Section 1001

SAFETY, GENERAL INFORMATION AND STANDARD TORQUE SPECIFICATIONS

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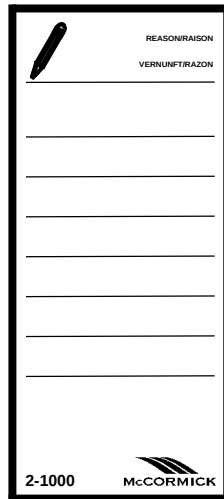
SAFETY



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 a warning tag as shown below on the key for the key switch when carrying out servicing or repairs to the tractor. Warning tags (publication number 2-1000) are available from your McCormick dealer.



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: 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 you McCormick 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: 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 McCormick service parts, when ordering refer to the Parts Catalog for the correct part number of the genuine McCormick replacement items. Failures due to the use of other than genuine McCormick 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
M4	3.0	4.0	3.4	4.5	4.3	5.8	4.8	6.5
M5	4.8	6.5	5.5	7.5	7.0	9.5	7.8	10.5
M6	8.2	11.0	9.2	12.5	11.8	16.0	13.3	18.0
M8	20.0	27.0	22.5	31.0	28.7	39.0	32.3	44.0
M10	40.0	54.0	45.0	61.0	56.0	77.0	64.0	87.0
M12	69.0	94.0	78.0	106.0	100.0	134.0	110.0	151.0
M14	110.0	150.0	125.0	170.0	160.0	215.0	180.0	240.0
M16	175.0	235.0	190.0	260.0	245.0	335.0	275.0	375.0
M20	345.0	470.0	390.0	530.0	480.0	650.0	540.0	730.0
M22	475.0	640.0	530.0	720.0	655.0	890.0	735.0	1000.0
M24	600.0	810.0	675.0	915.0	830.0	1125.0	930.0	1265.0
M30	1190.0	1615.0	1340.0	1815.0	1645.0	2235.0	1855.0	2515.0
M36	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
M4	2.3	3.0	2.6	3.4	3.2	4.4	3.6	4.9
M5	3.6	4.9	4.1	5.6	5.2	7.1	5.9	8.0
M6	6.2	8.3	6.9	9.4	8.9	12.0	10.0	13.5
M8	15.0	20.3	16.9	23.3	21.5	29.2	24.2	32.8
M10	30.0	41.0	34.0	46.0	42.0	58.0	48.0	65.0
M12	52.0	71.0	59.0	80.0	75.0	101.0	83.0	113.0
M14	83.0	113.0	94.0	126.0	120.0	161.0	135.0	180.0
M16	131.0	176.0	143.0	195.0	185.0	251.0	205.0	280.0
M20	259.0	353.0	293.0	400.0	360.0	490.0	405.0	550.0
M22	355.0	480.0	400.0	540.0	490.0	665.0	550.0	750.0
M24	450.0	608.0	506.0	686.0	625.0	845.0	700.0	950.0
M30	893.0	1211.0	1005.0	1361.0	1235.0	1675.0	1390.0	1885.0
M36	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

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GENERAL SPECIFICATIONS AND TORQUES

MC Series Tractors

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GENERAL SPECIFICATIONS

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GENERAL SPECIFICATIONS

Lubricants and Capacities

ENGINE

Oil Type McCormick Engine Oil, SAE 15W - 40
Capacity (With Filter Change) 7 Litres

ENGINE COOLANT

Coolant Mix McCormick Universal Anti-freeze
Solution of 33% to 50% Ethylene Glycol
(depending on market requirements)
Capacity 17. 5 Litres

AIR CONDITIONER SYSTEM

Compressor Oil Sanden SP - 20 Pag Oil
Capacities Refer to Page 7

TRANSMISSION

Oil Type McCormick HTX
Factory Fill Capacity 75 Litres
Refill Capacity (Approximately) 66.3 Litres

MFD AXLE

Oil Type McCormick Multi-Purpose Gear Oil
SAE 85W - 140 EP Gear Oil to API GL-5
or MIL-L-2105 Specification
MC80 (20.14 Axle) Differential Oil 5.0 Litres
MC90, MC100 and MC115 (20.19 Axle) Differential Oil 6.0 Litres
Axle Planetaries (Each) 0.6 Litres

FUEL TANK

Fuel Capacity 189 Litres

FRONT PTO (Kitchin)

Oil Type McCormick HTX
Capacity 0.65 Litres

FRONT PTO (Hydrac)

Oil Type McCormick Super Universal, SAE 10W - 30
Capacity 0.75 Litres

Engine

NOTE: For the Engine Specifications, refer to the your Engine Service Manual.

Fuel

NOTE: For the Fuel Specifications, refer to the your Engine Service Manual.

Electrical

System Type..... 12 Volt Negative Ground
 Batteries One or Two 12 Volt, Low Maintenance Hybrid Batteries
 Connected in Parallel, DIN Type 60527, Top Stud Terminals

BATTERY TYPE	SAE (COLD CRANKING CAPACITY)	IEC	DIN	AMPERE HOURS	RESERVE CAPACITY
644	660 Amps	440 Amps	400 Amps	95	180 mins
664	770 Amps	515 Amps	465 Amps	105	210 mins
648	810 Amps	545 Amps	490 Amps	120	220 mins

Alternator 12 Volt, 95 Amp
 Starter Motor 12 Volt, 3.1 kW

Transmission

POWERSHIFT TRANSMISSION

Friction Plate Thickness 2.45 to 2.60 mm
 Separator Plate Thickness 2.16 to 2.31 mm
 Backing Plate Thickness 5.58 to 5.71 mm
 Total Thickness 10.8 to 11.05 mm
 Number of Plates
 1st Clutch Pack (Input Shaft) 4 Friction 4 Separator
 3rd Clutch Pack (Input Shaft) 4 Friction 4 Separator
 2nd Clutch Pack (Dropshaft) 5 Friction 5 Separator
 4th Clutch Pack (Dropshaft) 4 Friction 5 Separator

RANGE TRANSMISSION

Intermediate Shaft End Play 0.025 to 0.102 mm
 Shuttle Shaft End Play 0.025 to 0.102 mm
 Friction Plate Thickness 2.45 to 2.60 mm
 Separator Plate Thickness 2.16 to 2.31 mm
 Backing Plate Thickness 5.58 to 5.71 mm
 Total Thickness 10.8 to 11.05 mm
 Pinion Shaft Bearing Preload Rolling Pull 2.0 to 3.2 kg/f

MFD CLUTCH

Slip Torque MC80 Tractors
 New Tractor 1300 Nm
 Used Tractors 790 to 960 Nm
 Tractor with Worn Plates 620 Nm or less
 Slip Torque MC90, MC100 and MC115 Tractors
 New Tractor 2100 Nm
 Used Tractors 1260 to 1540 Nm
 Tractor with Worn Plates 1000 Nm or less
 Number of Clutch Plates
 MC80 Tractors
 Friction Plates 5
 Separator Plates 5
 Number of Clutch Plates
 MC90, MC100 and MC115 Tractors
 Friction Plates 8
 Separator Plates 8

MFD Clutch Friction Plate Thickness	2.45 to 2.60 mm
MFD Clutch Separator Plate Thickness	2.16 to 2.31 mm
Belleville Washer Free Height	11 mm
MFD Clutch Assembly End Play	1.00 to 1.25 mm
MFD Bearing Housing End Play.....	0.03 to 0.12 mm
MFD Idler Gear End Play	0.025 to 0.102 mm

MFD OUTPUT SHAFT

Output Shaft End Play	0.1 to 0.15 mm
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CREEP TRANSMISSION

Creep Layshaft End Play.....	0.03 to 0.127 mm
Creep Main Shaft End Play	0.03 to 0.10 mm

DIFFERENTIAL AND DIFFERENTIAL LOCK

Ring Gear and Pinion Backlash	0.20 to 0.25 mm
Differential Lock Clutch	
Number of Plates	
Friction Plate.....	9
Separator Plate.....	8
Plate Thickness	
Friction Plate	1.98 to 2.13 mm
Separator Plate	1.05 to 1.18 mm
Piston Return Plate	4.11 to 4.23 mm

REAR AXLES

Axle Shaft Bearing (without Seal)	3.4 to 5.7 Nm
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PTO DRIVE SHAFT AND HYDRAULIC PUMP DRIVE GEAR

Hydraulic Pump Drive Gear End Play	0.025 to 0.125 mm
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PTO - REVERSIBLE/SHIFTABLE

PTO Input Shaft End Play	0.03 to 0.13 mm
PTO Output Shaft End Play.....	0.025 to 0.125 mm
PTO Clutch Friction Plate Thickness.....	2.45 to 2.60 mm
PTO Clutch Steel Separator Plate Thickness.....	2.16 to 2.31 mm
PTO Clutch Backing Plate Thickness.....	5.58 to 5.71 mm

PARKING BRAKE

Plate Thickness	
Friction Plate	6.25 to 6.40 mm
Backing Plate	2.16 to 2.31 mm

Hydraulics**HYDRAULIC PUMP**

Manufacturer	Vickers
Type.....	Pressure, Flow Compensated (PFC)
Maximum Pressure at Rated Engine rpm at Pump	198 to 206 bar
Maximum Flow at Couplers	95l/min.

POWERSHIFT VALVE

Control Spool Pilot Spring	
Free Length.....	47.91 mm
Outside Diameter	15.24 to 15.5 mm
Test Length	28.50 mm
Test Load	56.04 to 68.6 N

Inlet Spool Pilot Spring

Free Length.....	47.91 mm
Outside Diameter	15.24 to 15.5 mm
Test Length.....	28.50 mm
Test Load.....	56.04 to 68.6 N

Modulation Spring (Inner)

Free Length.....	38.79 mm
Outside Diameter	11.05 to 11.31 mm
Test Length.....	33.17 mm
Test Load.....	124.09 to 151.69 N

Modulation Spring (Outer)

Free Length.....	38.71 mm
Outside Diameter	18.03 to 18.26 mm
Test Length.....	33.17 mm
Test Load.....	256.17 to 313.17 N

Reducing Spring

Free Length.....	35.82 mm
Outside Diameter	10.87 to 11.13 mm
Test Length.....	27.00 mm
Test Load.....	24.02 to 29.36 N

HITCH VALVE

Compression Spring

Free Length.....	29.642 mm
Outside Diameter	14.22 mm

SHUTTLE VALVE

Modulation Spring Outer

Free Length.....	107.34 mm
Outside Diameter	20.09 to 21.35 mm
Test Length.....	88.6 mm
Test Load.....	37.23 to 45.51 N

Modulation Spring Inner

Free Length.....	78.36 mm
Outside Diameter	13.05 to 13.31 mm
Test Length.....	39.50 mm
Test Load.....	96.08 to 117.42 N

Inching Spool Return Spring (Yellow)

Free Length.....	91.73 mm
Outside Diameter	20.44 to 20.7 mm
Test Length.....	26.67 mm
Test Load.....	40.03 to 48.93 N

Forward/Reverse Spool Centring Spring

Free Length.....	51.75 mm
Outside Diameter	17.65 to 17.91 mm
Test Length.....	25.43 mm
Test Load.....	63.37 to 69.97 N

Feathering Spring (Low Pressure)

Free Length.....	25.02 mm
Outside Diameter	10.84 to 11.10 mm
Test Length.....	14.86 mm
Test Load.....	22.14 to 27.06 N

Feathering Spring (High Pressure)

Free Length.....	23.64 mm
Outside Diameter	11.50 to 11.76 mm
Test Length.....	16.25 mm
Test Load.....	96.07 to 117.43 N

PRIORITY REGULATOR VALVE

Priority Spring	
Free Length.....	58.07 mm
Outside Diameter	21.97 to 22.23 mm
Test Length	41.91 mm
Test Load	240.20 to 293.60 N
Regulator Spring	
Free Length.....	72.11 mm
Outside Diameter	22.043 to 22.397 mm
Test Length	41.91 mm
Test Load	476.38 to 582.24 N
Check Valve Spring	
Free Length.....	31.10 mm
Outside Diameter	5.97 to 6.23 mm
Test Length	26.01 mm
Test Load	8.41 to 10.27 N
Pilot Relief Valve Spring	
Free Length.....	29.56 mm
Outside Diameter	6.227 to 6.727 mm
Test Length	20.98 mm
Test Load	82.08 to 100.28 N

Air Conditioning**REFRIGERANT**

Type.....	HFC-134A
System Capacity	1.93 kg
Boiling Point at Atmospheric Pressure	-26° C

COMPRESSOR

Manufacturer	SANDEN
Model.....	SD 7H15MD4609
Number of Cylinders.....	7
Displacement Per Revolution	155 cc
Clutch Voltage	12 Volts
Clutch Ampage Draw at 12 Volts.....	3.6 to 4.2 Amperes
Front Clutch Plate Air Gap	0.4 to 0.8 mm
Drive Belt Tension (New)	422 to 516 N
Drive Belt Tension (Used).....	400 to 489 N

COMPRESSOR AND SYSTEM LUBRICATION (Nominal)

Lubrication Type	Sanden SP - 20 PAG Oil
Compressor Capacity (New)	270 to 300 ml
Compressor Capacity (Previously Run)	50 to 100 ml
Component Capacity (Add to Compressor When Component has been Replaced)	
Receiver Dryer	25 to 30 m
Condenser	45 to 50 ml
Evaporator	35 to 40 ml
Hoses and Tubes (Total)	45 to 50 ml

HIGH PRESSURE SWITCH

Location	Discharge Hose from Compressor at Condenser Inlet
Operation.....	Closed by Excessive System Pressure
Cut Out Pressure.....	26.9 to 28.3 bar

LOW PRESSURE SWITCH

Location..... Evaporator outlet in the Cab Roof
 Operation..... Closed by Low System Pressure
 Cut Out Pressure..... 0.14 to 0.41 bar

TEMPERATURE CONTROL SWITCH

Location..... Evaporator Core in the Cab Roof
 Cut Out Temperature (Maximum Cold Setting) 0.8° to 2.5° C
 Cut In Temperature (Maximum Cold Setting) 5.8° to 7.5° C

Conversion Table

Conversion	Conversion
mm X 0.03937 = inches	N (Newtons) X 0.225 = lbf
Bar X 14.5038 = PSI	NM X 0.738 = lb. ft
Litres X 0.22 = Imperial Gallons	NM X 8.85 = lb. in
Litres X 0.264 = U.S Gallons	° C X 1.8 (=32) = ° F

SPECIAL TORQUES

Engine

Engine to Transmission Retaining Bolts	
12 mm Flange Type Bolts	100 to 110 Nm
Torque Dampener Retaining Bolts	88 to 112 Nm
Front Bolster to Engine Retaining Bolts (With Loctite 271)	258 to 284 Nm
Engine Lifting Bracket Retaining Bolts	44 Nm

Transmission

POWERSHIFT TRANSMISSION

Transmission Front Cover Retaining Bolts	
16 mm Retaining Bolts	251 to 280 Nm
12 mm Retaining Bolts	101 to 113 Nm
Front Bearing Carrier Retaining Bolts	101 to 113 Nm
Oil Distributor Retaining Bolts	58 to 65 Nm
Drive Gear Retaining Bolt (with Loctite 638)	101 to 113 Nm

RANGE TRANSMISSION AND MFD CLUTCH

Speed to Range Transmission Retaining Bolts	251 to 280 Nm
Bearing Carrier (Sandwich Plate) Mounting Bolts	235 to 265 Nm
Gear Shifter Lever Clamping Bolt.....	94 to 106 Nm
MFD Clutch Mounting Bolts and Nut.....	251 to 280 Nm
Parking Brake Mounting Bolts	101 to 113 Nm
Pinion Shaft Bolt	
Plain Bolt Part Number 826-16110.....	335 to 375 Nm
Phosphate Coated Bolt Part Number 828-16110.....	265 to 285 Nm

IMPORTANT: When the pinion bolt is removed it must be discarded and replaced with a new bolt. It is important that the correct torque is used for the type of bolt installed.

DIFFERENTIAL AND DIFFERENTIAL LOCK

Ring Gear Retaining Bolts	276 to 308 Nm
Differential Lock Clutch Cage Retaining Bolts	130 Nm
Differential Bearing Carrier Retaining Bolts	58 to 65 Nm

REAR AXLES

Rear Axle Mounting Bolts.....	251 to 280 Nm
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MFD DRIVE SHAFT

MFD Drive Shaft Mounting Bolts	39 to 44 Nm
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PTO DRIVE SHAFT GEAR

PTO Drive Gear Retaining Bolt	101 to 113 Nm
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Transmission Cont.

PTO - REVERSIBLE/SHIFTABLE

PTO Housing Retaining Bolts and Nuts	
M16 Retaining Bolts	251 to 280 Nm
M20 Retaining Bolts and Nuts.....	251 to 280 Nm
PTO Selector Lever Retaining Bolt.....	101 to 113 Nm
Front Bearing Carrier Retaining Bolts	98 to 110 Nm
Oil Baffle Plate Retaining Bolts.....	39 to 44 Nm
Seal Retainer Retaining Bolts.....	27 to 31 Nm
PTO Clutch Retaining Bolt.....	147 to 166 Nm

Hydraulics

HITCH VALVE

Mounting Bolt	47 to 54 Nm
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PRIORITY REGULATOR VALVE

Mounting Bolt	47 to 54 Nm
Regulator Adjusting Plug Nut	36 to 53 Nm
Pilot Relief Valve	75 to 108 Nm
Pilot Relief Valve Adjusting Plug Nut	16 to 19 Nm

POWERSHIFT VALVE

Retaining Bolts	48 to 54 Nm
Test Port Plugs	34 to 54 Nm
M18 Spool End Plugs	34 to 54 Nm
M27 Spool End Plugs	34 to 54 Nm
Solenoid Valve	12 to 18 Nm
Solenoid Coil Retaining Nut	5 to 8 Nm
Shuttle Valve Retaining Bolts	48 to 54 Nm
Solenoid Valve	12 to 18 Nm
Solenoid Retaining Nut	5 to 8 Nm
Diagnostic Test Fitting	23 to 34 Nm
1/2 inch Plug	30 to 45 Nm
5/8 inch Plug	40 to 59 Nm
3/4 inch Plug	40 to 59 Nm
M14 Plug	23 to 34 Nm
Shuttle Valve Cover Retaining Screws (Loctite 242 on threads)	9 to 13 Nm
Solenoid Valve Plug (non-MFD)	30 to 45 Nm

Cab and Chassis

CAB

Cab Mounting Bracket to Rear Axle Bolts	244 to 320 Nm
Cab Mounting Bolt to Threaded Plate	47 to 61 Nm
Cab Mounting Nut	190 to 244 Nm

CHASSIS

Battery Box Retaining Nut and Bolts	221 to 250 Nm
Front Fuel Tank Bracket Retaining Bolts	285 to 320 Nm
Front Hitch Side Rail Retaining Bolts	488 Nm

WHEELS

Front Wheel to MFD Axle Nuts	300 to 350 Nm
Rear Wheel Nuts	
Flange Type Axle	270 to 310 Nm
Bar Type Axle	
Wheel Hub to Tapered Bushing	
Evenly Tightened in 50 Nm Intervals	244 to 298 Nm
Wheel to Wheel Hub	485 to 550 Nm

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