

# **4640 and 4840 Tractors**

**TECHNICAL MANUAL**  
4640 and 4840  
Tractors

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# 4640 AND 4840 TRACTORS TECHNICAL MANUAL TM-1183 (OCT-85)

## CONTENTS—REPAIR SECTIONS

### SECTION 10—GENERAL

- Group 00—Specifications and Special Tools
- Group 05—Predelivery, Delivery, and After-Sale Services
- Group 10—Tune-Up
- Group 15—Lubrication
- Group 20—Separation

### SECTION 20—ENGINE REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Cylinder Head, Valves, and Camshaft
- Group 10—Cylinder Block, Liners, Pistons and Rods
- Group 15—Crankshaft, Main Bearings, and Flywheel
- Group 20—Lubricating System
- Group 25—Cooling System

### SECTION 30—FUEL AND AIR REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Air Intake System
- Group 10—Diesel Fuel System
- Group 15—Control Linkage

### SECTION 40—ELECTRICAL REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Harness Replacement
- Group 10—Charging Circuit
- Group 15—Starting Circuit
- Group 20—Lighting Circuits
- Group 25—Instrument and Accessory Circuits
- Group 30—Power Front-Wheel Drive

### SECTION 50—POWER TRAIN REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Perma-Clutch
- Group 10—Quad-Range Planetary
- Group 15—Quad-Range Transmission
- Group 20—Power Shift Transmission
- Group 25—Power Take-Off
- Group 30—Differential
- Group 35—Final Drive
- Group 40—Power Front-Wheel Drive

### SECTION 60—STEERING/BRAKES REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Power Steering
- Group 10—Power Brakes

### SECTION 70—HYDRAULIC REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Miscellaneous Hydraulic Components
- Group 10—Hydraulic Pumps
- Group 15—Rockshaft and Implement Hitches
- Group 20—Selective Control Valve, Breakaway Coupler and Remote Cylinder

### SECTION 80—MISCELLANEOUS

- Group 00—Specifications and Special Tools
- Group 05—Front Axles
- Group 10—Wheels

### SECTION 90—OPERATOR STATION REPAIR

- Group 00—Specifications and Special Tools
- Group 05—Air Conditioning System
- Group 10—Heating System
- Group 15—Seat
- Group 20—Miscellaneous Components

---

**CONTENTS—OPERATION AND TEST SECTIONS****SECTION 220—ENGINE OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—System Operation
- Group 10—System Tests and Diagnosis

**SECTION 230—FUEL/AIR OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—Air Intake System
- Group 10—Diesel Fuel System
- Group 15—Control Linkage

**SECTION 240—ELECTRICAL OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—General Information and Diagrams
- Group 06—Electrical System Diagnosis
- Group 10—DELCOTRON Charging Circuit
- Group 12—JOHN DEERE Charging Circuit
- Group 15—Starting Circuit
- Group 20—Lighting Circuits
- Group 25—Instrument and Accessory Circuits
- Group 30—Power Front-Wheel Drive
- Group 35—Electrical Remote Control and Outlet Socket

**SECTION 250—POWER TRAIN OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—Quad-Range System Operation
- Group 10—Quad-Range Test and Diagnosis
- Group 15—Power Shift System Operation
- Group 20—Power Shift Tests and Diagnosis
- Group 25—Differential and Final Drive
- Group 30—Power Front-Wheel Drive

**SECTION 260—STEERING/BRAKES OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—Power Steering
- Group 10—Power Brakes

**SECTION 270—HYDRAULIC OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—Hydraulic System Operation
- Group 10—Hydraulic System Tests
- Group 15—Miscellaneous Hydraulic Components
- Group 20—Hydraulic Pumps
- Group 25—Rockshaft and Implement Hitches
- Group 30—Selective Control Valve, Breakaway Coupler, and Remote Cylinder

**SECTION 290—OPERATOR STATION OPERATION AND TESTS**

- Group 00—Specifications and Special Tools
- Group 05—Air Conditioning System
- Group 10—Heating System

# Section 10 GENERAL

## CONTENTS OF THIS SECTION

|  | Page     |   | Page     |
|--|----------|---|----------|
| <b>GROUP 00—SPECIFICATIONS</b>                                       |          | <b>GROUP 15—LUBRICATION</b>   |          |
| General Tractor Specifications .....                                 | 10-00-1  | Lubricants .....  | 10-15-1  |
| Predelivery .....  | 10-00-4  | Engine .....  | 10-15-2  |
| Tune-Up .....  | 10-00-5  | Transmission-Hydraulic System .....                                   | 10-15-3  |
| Lubrication .....  | 10-00-5  | Front Wheel Bearings .....  | 10-15-5  |
| Separation .....   | 10-00-6  | Grease Fittings .....   | 10-15-6  |
| Special Tools .....  | 10-00-7  |   |          |
| <b>GROUP 05—PREDELIVERY, DELIVERY,<br/>  AND AFTER-SALE SERVICES</b> |          | <b>GROUP 20—SEPARATION</b>  |          |
| Dealer Predelivery Service .....                                     | 10-05-1  | Removing SOUND-GARD® Body without<br>Control Support .....            | 10-20-1  |
| Inspection Checks .....  | 10-05-11 | Removing SOUND-GARD Body with<br>Control Support .....                | 10-20-5  |
| Dealer Service .....   | 10-05-13 | Separating Engine from<br>Clutch Housing .....                        | 10-20-10 |
| After Sale Inspection .....  | 10-05-14 | Removing Front End .....  | 10-20-14 |
|  |          | Removing Engine .....   | 10-20-18 |
| <b>GROUP 10—TUNE-UP</b>  |          | Separating Clutch Housing from<br>Power Shift Transmission Case ..... | 10-20-21 |
| Preliminary Engine Testing .....                                     | 10-10-1  | Separating Clutch Housing from<br>QUAD-RANGE™ Transmission Case ..... | 10-20-24 |
| Engine Tune-Up .....   | 10-10-1  | Removing Rear Axle Housing .....                                      | 10-20-26 |
| Operation .....  | 10-10-7  |   |          |
| General .....  | 10-10-7  |   |          |

## Group 00

# SPECIFICATIONS AND SPECIAL TOOLS GENERAL TRACTOR SPECIFICATIONS

4640

4840

**HORSEPOWER (Factory observed PTO**

|                         |                 |                 |
|-------------------------|-----------------|-----------------|
| horsepower at 2200 rpm) | 155 hp (116 kW) | 180 hp (134 kW) |
|-------------------------|-----------------|-----------------|

**ENGINE:**

|                       |   |   |
|-----------------------|---|---|
| Type                  | 6-cylinder, in-line, valve-in-head, diesel, turbocharged, intercooled | 6-cylinder, in-line, valve-in-head, diesel, turbocharged, intercooled |
| Slow idle speed       | 800 rpm   | 800 rpm   |
| Working speed range   | 1500 to 2200 rpm  | 1500 to 2200 rpm  |
| Bore and stroke       | 4.56 x 4.75 in. (116 x 121 mm)  | 4.56 x 4.75 in. (116 x 121 mm)  |
| Displacement          | 466 cu. in. (7.6 L)   | 466 cu. in. (7.6 L)   |
| Compression ratio     | 14.9 to 1   | 14.9 to 1   |
| Firing order          | 1-5-3-6-2-4   | 1-5-3-6-2-4   |
| Valve clearance       |   |   |
| Intake                | 0.018 in. (0.46 mm)   | 0.018 in. (0.46 mm)   |
| Exhaust               | 0.028 in. (0.71 mm)   | 0.028 in. (0.71 mm)   |
| Injection pump timing | TDC   | TDC   |
| Lubrication system    | force-feed, pressurized with full-flow filter                         | force-feed, pressurized with full-flow filter                         |

|   | 4640  | 4840   |
|---|---|--|
| <b>FUEL SYSTEM:</b>                                     |   |  |
| Type  | direct injection  | direct injection   |
| Injection pump type                                     | in-line   | in-line  |
| Air cleaner   | dry type with safety element  | dry type with safety element   |
| <b>COOLING SYSTEM:</b>                                  |   |  |
| Type  | dual-pressure with centrifugal pump   | dual-pressure with centrifugal pump                                  |
| Temperature control                                     | dual heavy duty thermostats   | dual heavy duty thermostats  |
| <b>CAPACITIES</b>                                       |   |  |
| Fuel tank   | 83 U.S. gal. (314 L)  | 103 U.S. gal. (390 L)  |
| Cooling system  | 38 U.S. qt. (36 L)  | 40 U.S. qt. (38 L)   |
| Crankcase (with filter change)                          | 20 U.S. qt. (19 L)  | 20 U.S. qt. (19 L)   |
| Transmission-hydraulic system<br>(Drain and fill)       |   |  |
| Power Shift Transmission                                | 16.5 U.S. gal. (62.5 L)   | 16.5 U.S. gal. (62.5 L)  |
| QUAD-RANGE Transmission                                 | 22.5 U.S. gal. (85.2 L)   |  |
| Add for Power Front-wheel Drive                         | 4.0 U.S. gal. (15.1 L)  | 4.0 U.S. gal. (15.1 L)   |
| Transmission-hydraulic system<br>(Dry, production fill) |   |  |
| Power Shift Transmission                                | 20.8 U.S. gal. (78.8 L)   | 20.8 U.S. gal. (78.8 L)  |
| QUAD-RANGE Transmission                                 | 26.0 U.S. gal. (98.4 L)   |  |
| Add for Power Front-wheel Drive                         | 5.0 U.S. gal. (18.9 L)  | 5.0 U.S. gal. (18.9 L)   |
| <b>POWER SHIFT TRANSMISSION:</b>                        |   |  |
| Type  | planetary gears, hydraulically actuated wet disk clutches and brakes              | planetary gears, hydraulically actuated wet disk clutches and brakes |
| Gear selections   | 8 forward and 4 reverse   | 8 forward and 4 reverse  |
| Shifting  | hydraulic, on-the-go and under load   | hydraulic, on-the-go and under load                                  |
| <b>QUAD-RANGE TRANSMISSION</b>                          |   |  |
| Type  | 2-speed, power-shifted planetary and 8-speed synchronized                         |  |
| Gear selections   | 16 forward and 6 reverse  |  |
| Perma-Clutch  | hydraulically-operated, multiple-disk wet clutch                                  |  |
| <b>POWER TAKE-OFF:</b>                                  |   |  |
| Type  | fully independent   | fully independent  |
| Speed (2200 engine rpm)                                 | 1000 rpm  | 1000 rpm   |
| Size  | 1-3/4 in. (45 mm)   | 1-3/4 in. (45 mm)  |
| Clutch  | hydraulically-operated, multiple-disk wet clutch                                  | hydraulically-operated, multiple-disk wet clutch                     |
| <b>POWER FRONT-WHEEL DRIVE:</b>                         |   |  |
| Type  | hydraulic motor with planetary gear reduction, constant torque and variable speed |  |
| Controls  | solenoid-operated valves, synchronized with transmission controls                 |  |
| <b>HYDRAULIC SYSTEM:</b>                                |   |  |
| Type  | closed-center, constant-pressure  | closed-center, constant-pressure                                     |
| Standby pressure  | 2250 psi (155 bar) (15 500 kPa)   | 2250 psi (155 bar) (15 500 kPa)                                      |
| <b>BRAKES:</b>  |   |  |
| Type  | hydraulically-operated wet disk   | hydraulically-operated wet disk                                      |

|                                   | 4640  | 4840  |
|-----------------------------------|---|---|
| <b>ELECTRICAL SYSTEM:</b>         |   |   |
| Type                              | 12-volt, negative ground  | 12-volt, negative ground  |
| Batteries                         | two, 6-volt, 5D group, 800 amps cold cranking, 376 minutes reserve capacity | two, 6-volt, 5D group, 800 amps cold cranking, 376 minutes reserve capacity |
| Alternator                        | 72-amp with Sound-Gard Body, 61-amp without                                 | 72-amp  |
| <b>TIRES AND TREADS</b>           |   |   |
|                                   | see page 10-05-6 in this section  | see page 10-05-6 in this section  |
| <b>DIMENSIONS:</b>                |   |   |
| Wheelbase                         | 118.5 in. (3010 mm)   | 118.5 in. (3010 mm)   |
| Overall length                    | 171.1 in. (4350 mm)   | 176.2 in. (4500 mm)   |
| Height to muffler cover*          | 129.3 in. (3283 mm)   | 129.3 in. (3283 mm)   |
| Height to top of Sound-Gard Body* | 118.3 in. (3005 mm)   | 118.3 in. (3005 mm)   |
| Overall width (regular axle)      | 96 in. (2440 mm)  | 96 in. (2440 mm)  |
| Width at fender                   | 82 in. (2082 mm)  | 82 in. (2082 mm)  |
| Width at roof                     | 54.4 in. (1382 mm)  | 54.4 in. (1382 mm)  |
| Turning radius                    | 161 in. (4100 mm)   | 161 in. (4100 mm)   |
| <b>SHIPPING WEIGHT**</b>          |   |   |
|                                   | 14,350 lbs. (6510 kg)   | 14,900 lbs. (6760 kg)   |

\*Tractor equipped with 20.8-38 R1 rear tires and 11.00-16 front tires.

\*\*Equipped for average field service, without fuel and ballast. Add approximately 1000 lbs. (450 kg) if equipped with power front-wheel drive.

**GROUND SPEEDS**

Approximate ground speeds are given in the following charts. Speeds are shown in miles per hour, with kilometers per hour in parentheses.

Speeds are for a Tractor with 18.4-38 tires.

**POWER SHIFT TRANSMISSION GROUND SPEEDS**

| Gear     | 1500 Engine RPM | 2200 Engine RPM |
|----------|-----------------|-----------------|
| 1st      | 1.2 (1.9)       | 1.7 (2.8)       |
| 2nd      | 1.7 (2.7)       | 2.5 (4.0)       |
| 3rd      | 2.6 (4.2)       | 3.9 (6.2)       |
| 4th      | 3.4 (5.5)       | 5.0 (8.1)       |
| 5th      | 4.5 (7.3)       | 6.6 (10.6)      |
| 6th      | 5.9 (9.5)       | 8.6 (13.9)      |
| 7th      | 7.5 (12.1)      | 11.0 (17.7)     |
| 8th      | 12.9 (20.7)     | 18.8 (30.3)     |
| 1st rev. | 1.5 (2.4)       | 2.2 (3.6)       |
| 2nd rev. | 2.2 (3.5)       | 3.2 (5.1)       |
| 3rd rev. | 3.4 (5.5)       | 5.0 (8.0)       |
| 4th rev. | 4.4 (7.1)       | 6.5 (10.4)      |

**QUAD-RANGE TRANSMISSION GROUND SPEEDS**

| Range | Speed | 1500 Engine RPM | 2200 Engine RPM |
|-------|-------|-----------------|-----------------|
| A     | 1     | 1.4 (2.2)       | 2.0 (3.2)       |
|       | 2     | 1.7 (2.8)       | 2.5 (4.0)       |
|       | 3     | 2.4 (3.9)       | 3.5 (5.7)       |
|       | 4     | 3.1 (5.0)       | 4.5 (7.3)       |
|       | 1R    | 2.5 (4.1)       | 3.7 (6.0)       |
|       | 2R    | 3.2 (5.2)       | 4.7 (7.6)       |
| B     | 1     | 3.0 (4.8)       | 4.4 (7.1)       |
|       | 2     | 3.8 (6.1)       | 5.6 (9.0)       |
|       | 3     | 5.4 (8.7)       | 8.0 (12.8)      |
|       | 4     | 6.9 (11.1)      | 10.1 (16.3)     |
|       | 1R    | 5.7 (9.1)       | 8.3 (13.4)      |
|       | 2R    | 7.2 (11.6)      | 10.6 (17.0)     |
| C     | 1     | 3.5 (5.7)       | 5.2 (8.3)       |
|       | 2     | 4.5 (7.2)       | 6.6 (10.6)      |
|       | 3     | 6.4 (10.3)      | 9.4 (15.1)      |
|       | 4     | 8.1 (13.1)      | 11.9 (19.1)     |
|       | 1R    | 6.6 (10.7)      | 9.8 (15.7)      |
|       | 2R    | 8.5 (13.6)      | 12.4 (20.0)     |
| D     | 1     | 5.7 (9.2)       | 8.4 (13.5)      |
|       | 2     | 7.3 (11.7)      | 10.7 (17.2)     |
|       | 3     | 10.3 (16.6)     | 15.2 (24.4)     |
|       | 4     | 13.1 (21.1)     | 19.3 (31.0)     |

(Specifications and design subject to change without notice.)

## PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES

| Item                           | Specification               |
|--------------------------------|-----------------------------|
| Toe-in .....                   | 1/8 to 3/8 inch (3 to 9 mm) |
| Injection pump timing .....    | TDC                         |
| Engine speeds                  |                             |
| Slow idle .....                | 780 to 820 rpm              |
| Fast idle .....                | 2325 to 2425 rpm            |
| Rated speed at full load ..... | 2200 rpm                    |

| Torque  | ft-lbs | N·m | kgm |
|---|--------|-----|-----|
| Sound-Gard Body or Four-Post Roll-Gard mounting bolts ..... | 150    | 200 | 20  |
| Front axle-to-knee bolts .....                              | 445    | 600 | 60  |
| Front wheel-to-hub bolts .....                              | 100    | 135 | 14  |
| Special bolts on rear hubs .....                            | 300    | 410 | 41  |
| Steel wheel-to-hub bolts .....                              | 240    | 325 | 33  |
| Rimclamp-to-wheel bolts .....                               | 170    | 230 | 23  |
| Rockshaft lift arm retaining bolts .....                    | 300    | 410 | 41  |
| Other nuts and cap screws:                                  |        |     |     |

### TORQUE CHART

| Bolt Diameter       | Plain Head* |     |      | Three Radial Dashes* |     |     | Six Radial Dashes* |      |     |
|---------------------|-------------|-----|------|----------------------|-----|-----|--------------------|------|-----|
|                     | ft-lbs      | N·m | kgm  | ft-lbs               | N·m | kgm | ft-lbs             | N·m  | kgm |
| 1/4 in. (6.35 mm)   | 6           | 8   | 0.8  | 10                   | 14  | 1.4 | 14                 | 19   | 1.9 |
| 5/16 in. (7.93 mm)  | 13          | 18  | 1.8  | 20                   | 27  | 2.7 | 30                 | 41   | 4.1 |
| 3/8 in. (9.53 mm)   | 23          | 31  | 3.1  | 35                   | 47  | 4.7 | 50                 | 70   | 7.0 |
| 7/16 in. (11.11 mm) | 35          | 47  | 4.7  | 55                   | 75  | 7.5 | 80                 | 110  | 11  |
| 1/2 in. (12.70 mm)  | 55          | 75  | 7.5  | 85                   | 115 | 12  | 120                | 160  | 16  |
| 9/16 in. (14.29 mm) | 75          | 100 | 10   | 130                  | 175 | 18  | 175                | 240  | 24  |
| 5/8 in. (15.88 mm)  | 105         | 140 | 14   | 170                  | 230 | 23  | 240                | 325  | 33  |
| 3/4 in. (19.05 mm)  | 185         | 250 | 25   | 300                  | 410 | 41  | 425                | 575  | 58  |
| 7/8 in. (22.23 mm)  | 160         | 220 | 22** | 445                  | 600 | 60  | 685                | 930  | 93  |
| 1 in. (25.40 mm)    | 250         | 340 | 34** | 670                  | 900 | 90  | 1030               | 1400 | 140 |

\*The types of bolts and cap screws are identified by head markings as follows:

Plain Head: regular machine bolts and cap screws.

3-Dash Head: tempered steel high-strength bolts and cap screws.

6-Dash Head: tempered steel extra high-strength bolts and cap screws.

\*\*Machine bolts and cap screws 7/8-inch and larger are sometimes formed hot rather than cold, which accounts for the lower torque.

## TUNE-UP

| Item   | Specification                     |
|--|-----------------------------------|
| PTO horsepower   |                                   |
| 4640 .....   | 155 hp (116 kW)                   |
| 4840 .....   | 180 hp (134 kW)                   |
| Compression .....  | 330 to 370 psi (22.5 to 25.5 bar) |
| Vacuum (full speed, full load, clean air filters) .....            | 10.5 to 11.5 in. (26 to 29 mbar)  |
| Air cleaner indicator switch closing vacuum .....                  | 24 to 26 in. (60 to 65 mbar)      |
| Manifold pressure (full speed, full load, clean air filters) ..... | 18 to 23 psi (1.2 to 1.6 bar)     |
| Thermostat opening temperature .....                               | 160 to 180°F (71 to 82°C)         |
| Radiator cap pressure release                                      |                                   |
| Low pressure cap .....   | 6.25 to 7.50 psi (0.4 to 0.5 bar) |
| High pressure cap .....  | 14 to 17 psi (0.9 to 1.2 bar)     |
| Engine speeds  |                                   |
| Slow idle .....  | 780 to 820 rpm                    |
| Fast idle .....  | 2325 to 2425 rpm                  |
| Rated speed at full load .....                                     | 2200 rpm                          |

## LUBRICATION

|  |                         |
|--|-------------------------|
| Engine crankcase oil capacity .....                                    | 20 U.S. qt. (19 L)      |
| Transmission-hydraulic system  |                         |
| (Drain and fill):  |                         |
| Power Shift .....  | 16.5 U.S. gal. (62.5 L) |
| QUAD-RANGE Transmission .....  | 22.5 U.S. gal. (85.2 L) |
| Add for power front-wheel drive .....                                  | 4.0 U.S. gal. (15.1 L)  |
| Transmission-hydraulic system  |                         |
| (Dry, production fill):  |                         |
| Power Shift Transmission .....   | 20.8 U.S. gal. (78.8 L) |
| QUAD-RANGE Transmission .....  | 26.0 U.S. gal. (98.4 L) |
| Add for power front wheel drive .....                                  | 5.0 U.S. gal. (18.9 L)  |
| Service intervals  |                         |
| Check engine oil level .....   | Every 10 hours          |
| Change engine oil .....  | Every 100 hours         |
| Replace engine oil filter .....  | Every 200 hours         |
| Clean crankcase breather filter .....                                  | Every 200 hours         |
| Check transmission-hydraulic system oil level .....                    | Every 200 hours         |
| Replace transmission-hydraulic system oil filter (Quad-Range) .....    | Every 200 hours         |
| Replace transmission-hydraulic system oil filters (Power Shift) .....  | Every 600 hours         |
| Change transmission-hydraulic oil .....                                | Every 1200 hours        |
| Clean main hydraulic pump screen .....                                 | Every 1200 hours        |
| Clean and repack front wheel bearings .....                            | Every 1200 hours        |
| Lubricate grease fittings  |                         |
| Front axle pivot pins, steering spindles, tie rods (10 fittings) ..... | Every 10 hours          |
| Wide-swing drawbar rollers (if equipped) .....                         | Every 10 hours          |
| Front wheel bearings (only in extremely wet conditions) .....          | Every 10 hours          |
| 3-point hitch .....  | Every 200 hours         |
| Rear axle bearings .....   | Every 600 hours         |



## SEPARATION

| ITEM   | SPECIFICATION                           |
|--|---|
| Fan belt tension   |   |
| New Belt   |   |
| Single belt .....  | 130-140 lbs. (572-622 N)                |
| Dual belt .....  | 95-104 lbs. (423-467 N)                 |
| After Run In   |   |
| All belts .....  | 85-94 lbs. (378-423 N)                  |
| ITEM   | TORQUE                                  |
| SOUND-GARD Body retaining cap screws .....                 | 150 ft-lbs (203 N·m) (20.3 kgm)         |
| ROLL-GARD (4-post) mounting cap screws .....               | 150 ft-lbs (203 N·m) (20.3 kgm)         |
| Engine-to-clutch housing cap screws .....                  | 1/2 in.—85 ft-lbs (115 N·m) (11.5 kgm)  |
|  | 3/4 in.—300 ft-lbs (406 N·m) (40.6 kgm) |
| Clutch housing-to-engine cap screws .....                  | 300 ft-lbs (406 N·m) (40.6 kgm)         |
| Hydraulic pump support-to-engine cap screws .....          | 85 ft-lbs (115 N·m) (11.5 kgm)          |
| Hydraulic pump coupler lock nuts .....                     | 30 ft-lbs (41 N·m) (4.1 kgm)            |
| Hydraulic pump drive coupling .....                        | 35 ft-lbs (47 N·m) (4.7 kgm)            |
| Side frames-to-engine .....                                | 5/8 in.—275 ft-lbs (373 N·m) (37.3 kgm) |
|  | 3/4 in.—425 ft-lbs (578 N·m) (57.8 kgm) |
| Clutch housing-to-transmission case cap screws .....       | 5/8 in.—170 ft-lbs (230 N·m) (23 kgm)   |
|  | 3/4 in.—300 ft-lbs (406 N·m) (40.6 kgm) |
| Oil filter inlet pipe elbow cap screws .....               | 45 ft-lbs (61 N·m) (6.1 kgm)            |
| Axle housing-to-transmission case cap screws .....         | 170 ft-lbs (230 N·m) (23 kgm)           |
| Radiator hose clamps (clean and dry) .....                 | 36 in-lbs (4 N·m) (0.4 kgm)             |
| Transmission pump elbow-to-clutch housing cap screws ..... | 45 ft-lbs (61 N·m) (6.1 kgm)            |
| Oil pan-to-clutch housing cap screws .....                 | 85 ft-lbs (115 N·m) (11.5 kgm)          |
| Hose clamps .....  | 30 in-lbs (3.4 N·m) (0.3 kgm)           |



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