

# **SERVICE MANUAL**

**Wheel Loader**  
**W270C**  
**W300C**

Print No. 47357329



**W270C**  
**W300C**

**Wheel Loader**

47357329

Use for Service Manual



# W270C - W300C Wheel Loader Service Manual 47357329

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# SECTION INDEX

## GENERAL

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# Section 1001


## GENERAL TORQUE SPECIFICATIONS


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## TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphities, Molydisulfide greases, or other extreme pressure lubricants are used.

| <b>Grade 5 Bolts, Nuts, and Studs</b>   |              |               |
|---|--------------|---------------|
|  |              |               |
| Size  | Pound-Inches | Newton metres |
| 1/4 inch  | 108 to 132   | 12 to 15      |
| 5/16 inch   | 204 to 252   | 23 to 28      |
| 3/8 inch  | 420 to 504   | 48 to 57      |
|   |              |               |
| Size  | Pound-Feet   | Newton metres |
| 7/16 inch   | 54 to 64     | 73 to 87      |
| 1/2 inch  | 80 to 96     | 109 to 130    |
| 9/16 inch   | 110 to 132   | 149 to 179    |
| 5/8 inch  | 150 to 180   | 203 to 244    |
| 3/4 inch  | 270 to 324   | 366 to 439    |
| 7/8 inch  | 400 to 480   | 542 to 651    |
| 1.0 inch  | 580 to 696   | 787 to 944    |
| 1-1/8 inch  | 800 to 880   | 1085 to 1193  |
| 1-1/4 inch  | 1120 to 1240 | 1519 to 1681  |
| 1-3/8 inch  | 1460 to 1680 | 1980 to 2278  |
| 1-1/2 inch  | 1940 to 2200 | 2631 to 2983  |


| <b>Grade 8 Bolts, Nuts, and Studs</b>   |              |               |
|---|--------------|---------------|
|  |              |               |
| Size  | Pound-Inches | Newton metres |
| 1/4 inch  | 144 to 180   | 16 to 20      |
| 5/16 inch   | 288 to 348   | 33 to 39      |
| 3/8 inch  | 540 to 648   | 61 to 73      |
|   |              |               |
| Size  | Pound-Feet   | Newton metres |
| 7/16 inch   | 70 to 84     | 95 to 114     |
| 1/2 inch  | 110 to 132   | 149 to 179    |
| 9/16 inch   | 160 to 192   | 217 to 260    |
| 5/8 inch  | 220 to 264   | 298 to 358    |
| 3/4 inch  | 380 to 456   | 515 to 618    |
| 7/8 inch  | 600 to 720   | 814 to 976    |
| 1.0 inch  | 900 to 1080  | 1220 to 1465  |
| 1-1/8 inch  | 1280 to 1440 | 1736 to 1953  |
| 1-1/4 inch  | 1820 to 2000 | 2468 to 2712  |
| 1-3/8 inch  | 2380 to 2720 | 3227 to 3688  |
| 1-1/2 inch  | 3160 to 3560 | 4285 to 4827  |


**NOTE:** Use thick nuts with Grade 8 bolts.

## TORQUE SPECIFICATIONS - METRIC HARDWARE

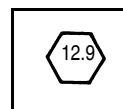
Use the following torques when specifications are not given.

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used.

| <b>Grade 8.8 Bolts, Nuts, and Studs</b>   |              |               |
|---|--------------|---------------|
|  |              |               |
| Size  | Pound-Inches | Newton metres |
| M4  | 24 to 36     | 3 to 4        |
| M5  | 60 to 72     | 7 to 8        |
| M6  | 96 to 108    | 11 to 12      |
| M8  | 228 to 276   | 26 to 31      |
| M10   | 456 to 540   | 52 to 61      |
|   |              |               |
| Size  | Pound-Foot   | Newton metres |
| M12   | 66 to 79     | 90 to 107     |
| M14   | 106 to 127   | 144 to 172    |
| M16   | 160 to 200   | 217 to 271    |
| M20   | 320 to 380   | 434 to 515    |
| M24   | 500 to 600   | 675 to 815    |
| M30   | 920 to 1100  | 1250 to 1500  |
| M36   | 1600 to 1950 | 2175 to 2600  |

| <b>Grade 10.9 Bolts, Nuts, and Studs</b>  |              |               |
|---|--------------|---------------|
|  |              |               |
| Size  | Pound-Inches | Newton metres |
| M4  | 36 to 48     | 4 to 5        |
| M5  | 84 to 96     | 9 to 11       |
| M6  | 132 to 156   | 15 to 18      |
| M8  | 324 to 384   | 37 to 43      |
|   |              |               |
| Size  | Pound-Foot   | Newton metres |
| M10   | 54 to 64     | 73 to 87      |
| M12   | 93 to 112    | 125 to 150    |
| M14   | 149 to 179   | 200 to 245    |
| M16   | 230 to 280   | 310 to 380    |
| M20   | 450 to 540   | 610 to 730    |
| M24   | 780 to 940   | 1050 to 1275  |
| M30   | 1470 to 1770 | 2000 to 2400  |
| M36   | 2580 to 3090 | 3500 to 4200  |

### Grade 12.9 Bolts, Nuts, and Studs



Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

## TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

| <b>37 Degree Flare Fitting</b> |                |                  |                  |
|--------------------------------|----------------|------------------|------------------|
| Tube OD<br>Hose ID             | Thread<br>Size | Pound-<br>Inches | Newton<br>metres |
| 1/4 inch<br>6.4 mm             | 7/16-20        | 72 to 144        | 8 to 16          |
| 5/16 inch<br>7.9 mm            | 1/2-20         | 96 to 192        | 11 to 22         |
| 3/8 inch<br>9.5 mm             | 9/16-18        | 120 to 300       | 14 to 34         |
| 1/2 inch<br>12.7 mm            | 3/4-16         | 180 to 504       | 20 to 57         |
| 5/8 inch<br>15.9 mm            | 7/8-14         | 300 to 696       | 34 to 79         |
|                                |                |                  |                  |
| Tube OD<br>Hose ID             | Thread<br>Size | Pound-<br>Feet   | Newton<br>metres |
| 3/4 inch<br>19.0 mm            | 1-1/16-12      | 40 to 80         | 54 to 108        |
| 7/8 inch<br>22.2 mm            | 1-3/16-12      | 60 to 100        | 81 to 135        |
| 1.0 inch<br>25.4 mm            | 1-5/16-12      | 75 to 117        | 102 to 158       |
| 1-1/4 inch<br>31.8 mm          | 1-5/8-12       | 125 to 165       | 169 to 223       |
| 1-1/2 inch<br>38.1 mm          | 1-7/8-12       | 210 to 250       | 285 to 338       |

| <b>Straight Threads with O-ring</b> |                |                  |                  |
|-------------------------------------|----------------|------------------|------------------|
| Tube OD<br>Hose ID                  | Thread<br>Size | Pound-<br>Inches | Newton<br>metres |
| 1/4 inch<br>6.4 mm                  | 7/16-20        | 144 to 228       | 16 to 26         |
| 5/16 inch<br>7.9 mm                 | 1/2-20         | 192 to 300       | 22 to 34         |
| 3/8 inch<br>9.5 mm                  | 9/16-18        | 300 to 480       | 34 to 54         |
| 1/2 inch<br>12.7 mm                 | 3/4-16         | 540 to 804       | 57 to 91         |
|                                     |                |                  |                  |
| Tube OD<br>Hose ID                  | Thread<br>Size | Pound-<br>Feet   | Newton<br>metres |
| 5/8 inch<br>15.9 mm                 | 7/8-14         | 58 to 92         | 79 to 124        |
| 3/4 inch<br>19.0 mm                 | 1-1/16-12      | 80 to 128        | 108 to 174       |
| 7/8 inch<br>22.2 mm                 | 1-3/16-12      | 100 to 160       | 136 to 216       |
| 1.0 inch<br>25.4 mm                 | 1-5/16-12      | 117 to 187       | 159 to 253       |
| 1-1/4 inch<br>31.8 mm               | 1-5/8-12       | 165 to 264       | 224 to 357       |
| 1-1/2 inch<br>38.1 mm               | 1-7/8-12       | 250 to 400       | 339 to 542       |

| <b>Split Flange Mounting Bolts</b> |                  |                  |
|------------------------------------|------------------|------------------|
| Size                               | Pound-<br>Inches | Newton<br>metres |
| 5/16-18                            | 180 to 240       | 20 to 27         |
| 3/8-16                             | 240 to 300       | 27 to 34         |
| 7/16-14                            | 420 to 540       | 47 to 61         |
|                                    |                  |                  |
| Size                               | Pound-<br>Feet   | Newton<br>metres |
| 1/2-13                             | 55 to 65         | 74 to 88         |
| 5/8-11                             | 140 to 150       | 190 to 203       |

## TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

| O-ring Face Seal End |                       |             |              |               | O-ring Boss End Fitting or Lock Nut |              |               |
|----------------------|-----------------------|-------------|--------------|---------------|-------------------------------------|--------------|---------------|
| Nom. SAE Dash Size   | Tube OD               | Thread Size | Pound-Inches | Newton metres | Thread Size                         | Pound-Inches | Newton metres |
| -4                   | 1/4 inch<br>6.4 mm    | 9/16-18     | 120 to 144   | 14 to 16      | 7/16-20                             | 204 to 240   | 23 to 27      |
| -6                   | 3/8 inch<br>9.5 mm    | 11/16-16    | 216 to 240   | 24 to 27      | 9/16-18                             | 300 to 360   | 34 to 41      |
| -8                   | 1/2 inch<br>12.7 mm   | 13/16-16    | 384 to 480   | 43 to 54      | 3/4-16                              | 540 to 600   | 61 to 68      |
|                      |                       |             |              |               |                                     |              |               |
|                      |                       |             |              |               | Thread Size                         | Pound-Feet   | Newton metres |
| -10                  | 5/8 inch<br>15.9 mm   | 1-14        | 552 to 672   | 62 to 76      | 7/8-14                              | 60 to 65     | 81 to 88      |
|                      |                       |             |              |               |                                     |              |               |
| Nom. SAE Dash Size   | Tube OD               | Thread Size | Pound-Feet   | Newton metres | 1-1/16-12                           | 85 to 90     | 115 to 122    |
|                      |                       |             |              |               | 1-3/16-12                           | 95 to 100    | 129 to 136    |
| -12                  | 3/4 inch<br>19.0 mm   | 1-3/16-12   | 65 to 80     | 90 to 110     | 1-5/16-12                           | 115 to 125   | 156 to 169    |
| -14                  | 7/8 inch<br>22.2 mm   | 1-3/16-12   | 65 to 80     | 90 to 110     | 1-5/8-12                            | 150 to 160   | 203 to 217    |
| -16                  | 1.0 inch<br>25.4 mm   | 1-7/16-12   | 92 to 105    | 125 to 140    | 1-7/8-12                            | 190 to 200   | 258 to 271    |
| -20                  | 1-1/4 inch<br>31.8 mm | 1-11/16-12  | 125 to 140   | 170 to 190    |                                     |              |               |
| -24                  | 1-1/2 inch<br>38.1 mm | 2-12        | 150 to 180   | 200 to 254    |                                     |              |               |

# Section 1002

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## FLUIDS AND LUBRICANTS



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## CAPACITIES AND LUBRICANTS

### W270C CAPACITIES AND SPECIFICATIONS

| Engine           |                                       |                                   |
|------------------|---------------------------------------|-----------------------------------|
|                  | Type of oil                           | AMBRA Mastergold HSP (SAE 15W-40) |
|                  | Capacity (with filter change)         | 28.5 l (30.1 US qt)               |
| Cooling system   |                                       |                                   |
|                  | System capacity                       | 56.8 l (60.0 US qt)               |
| Fuel system      |                                       |                                   |
|                  | System capacity                       | 473.0 l (125.0 US gal)            |
| Hydraulic system |                                       |                                   |
|                  | Type of fluid                         | AMBRA Hydrosystem 46 HV           |
|                  | Total system capacity                 | 250.0 l (66.0 US gal)             |
|                  | Reservoir capacity                    | 134.0 l (35.4 US gal)             |
| Transmission     |                                       |                                   |
|                  | Type of oil                           | AMBRA Supergold (SAE 10W-30)      |
|                  | Service capacity - with filter change | 45.4 l (48 US qt)                 |
| Axles            |                                       |                                   |
|                  | Type of oil                           | AMBRA TRX Transaxle Fluid         |
|                  | Front axle STD                        | 42 l (44 US qt)                   |
|                  | Rear axle STD                         | 42 l (44 US qt)                   |
|                  | Front axle HD                         | 62 l (65.5 US qt)                 |
|                  | Rear axle HD                          | 65.7 l (69.4 US qt)               |

**W300C Capacities and Specifications**

| Engine           |                                       |                                   |
|------------------|---------------------------------------|-----------------------------------|
|                  | Type of oil                           | AMBRA Mastergold HSP (SAE 15W-40) |
|                  | Capacity (with filter change)         | 28.5 l (30.1 US qt)               |
| Cooling system   |                                       |                                   |
|                  | System capacity                       | 56.8 l (60.0 US qt)               |
| Fuel system      |                                       |                                   |
|                  | System capacity                       | 473.0 l (125.0 US gal)            |
| Hydraulic system |                                       |                                   |
|                  | Type of fluid                         | AMBRA Hydrosystem 46 HV           |
|                  | Total system capacity                 | 250.0 l (66.0 US gal)             |
|                  | Reservoir capacity                    | 134.0 l (35.4 US gal)             |
| Transmission     |                                       |                                   |
|                  | Type of oil                           | AMBRA Supergold (SAE 10W-30)      |
|                  | Service capacity - with filter change | 45.4 l (48 US qt)                 |
| Axles            |                                       |                                   |
|                  | Type of oil                           | AMBRA TRX Transaxle Fluid         |
|                  | Front axle STD                        | 64.0 l (67.6 US qt)               |
|                  | Rear axle STD                         | 64.0 l (67.6 US qt)               |
|                  | Front axle HD                         | 62 l (65.5 US qt)                 |
|                  | Rear axle HD                          | 65.7 l (69.4 US qt)               |

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