

# 821C Loader Service Manual

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**Reprinted**

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Bur 7-13053

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**NOTE:** Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.



# SECTION INDEX - GENERAL

## Section Title

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Fluids and Lubricants ..... 1002

Loctite Product Chart

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**CASE CANADA CORPORATION**  
3350 SOUTH SERVICE ROAD  
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# Section 1001

## STANDARD TORQUE SPECIFICATIONS

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Rac 8-71601

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TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS ..... 5

### 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-Feet   | 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-Feet   | 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

| Tube OD<br>Hose ID             | Thread<br>Size | Pound-<br>Inches | Newton<br>metres |
|--------------------------------|----------------|------------------|------------------|
| <b>37 Degree Flare Fitting</b> |                |                  |                  |
| 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>Inches | 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       |

| Tube OD<br>Hose ID                  | Thread<br>Size | Pound-<br>Inches | Newton<br>metres |
|-------------------------------------|----------------|------------------|------------------|
| <b>Straight Threads with O-ring</b> |                |                  |                  |
| 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>Inches | 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

| Nom. SAE Dash Size          | Tube OD               | Thread Size | Pound-Inches | Newton metres | Thread Size                                | Pound-Inches | Newton metres |
|-----------------------------|-----------------------|-------------|--------------|---------------|--|--------------|---------------|
| <b>O-ring Face Seal End</b> |                       |             |              |               | <b>O-ring Boss End Fitting or Lock Nut</b> |              |               |
| -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-Inches | 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-Inches | 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    |  |              |               |

**NOTE:** Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.



# Section 1002

1002

## FLUIDS AND LUBRICANTS

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| MAINTENANCE SCHEDULE .....      | 5 |

### CAPACITIES AND LUBRICANTS

|  |   |
|--|---|
| Engine oil                                     |   |
| Capacity with filter change.....               | 20.8 litres (22 U.S. quarts)  |
| Type of oil.....                               | Case No. 1 Engine Oil - see engine oil recommendations on page 3                    |
| Engine cooling system                          |   |
| Capacity.....                                  | 32.1 litres (34 U.S. quarts)  |
| Type of coolant .....                          | Ethylene glycol and water mixed for lowest ambient temperature (at least 50/50 mix) |
| Fuel tank                                      |   |
| Capacity .....                                 | 268 litres (70.8 U.S. gallons)  |
| Type of fuel.....                              | See diesel fuel specifications on page 4  |
| Hydraulic system                               |   |
| Hydraulic reservoir refill capacity .....      | 90 litres (95.2 U.S. quarts)  |
| Total system .....                             | 174 litres (184 U.S. quarts)  |
| Type of oil.....                               | MS-1209 Hy-Tran Ultra®  |
| Transmission                                   |   |
| Refill capacity with filter change .....       | 12.3 litres (13 U.S. quarts)  |
| Total system capacity .....                    | 26.5 litres (28 U.S. quarts)  |
| Type of oil.....                               | Case No. 1 Engine Oil (15W-40)  |
| Axles  |   |
| Capacity of center bowl                        |   |
| Front .....                                    | 18.9 litres (20 quarts) 135H EP Plus 1.9 litres (4 pints) B91246                    |
| Rear.....                                      | 13.7 litres (14.5 quarts) 135H EP Plus 1.4 litres (3 pints) B91246                  |
| Capacity of planetary (each)                   |   |
| Front .....                                    | 6.0 litres (6.5 quarts) 135H EP   |
| Rear.....                                      | 5.5 litres (6 quarts) 135H EP   |
| Type of lubricant .....                        | Case (MS1316) 135H EP (SAE 85W-140)   |
| Limited slip additive .....                    | Case B91246   |
| Brake system                                   |   |
| Type of fluid (same as hydraulic system) ..... | MS-1209 Hy-Tran Ultra®  |

**NOTE:** *DO NOT use an alternate oil in the axles. The brake components in the axles could be damaged as a result of using an alternate oil.*

### Conversion Formulas

Imperial quart = litres x 0.879877

Imperial gallons = litres x 0.219969

# ENGINE OIL RECOMMENDATIONS

## Engine Oil Selection

Case No. 1 Engine Oil is recommended for use in your Case engine. Case engine oil will lubricate your engine correctly under all operating conditions.

If Case No. 1 Multi-Viscosity or Single Grade Engine Oil is not available, use only oil meeting API engine oil service category CE.



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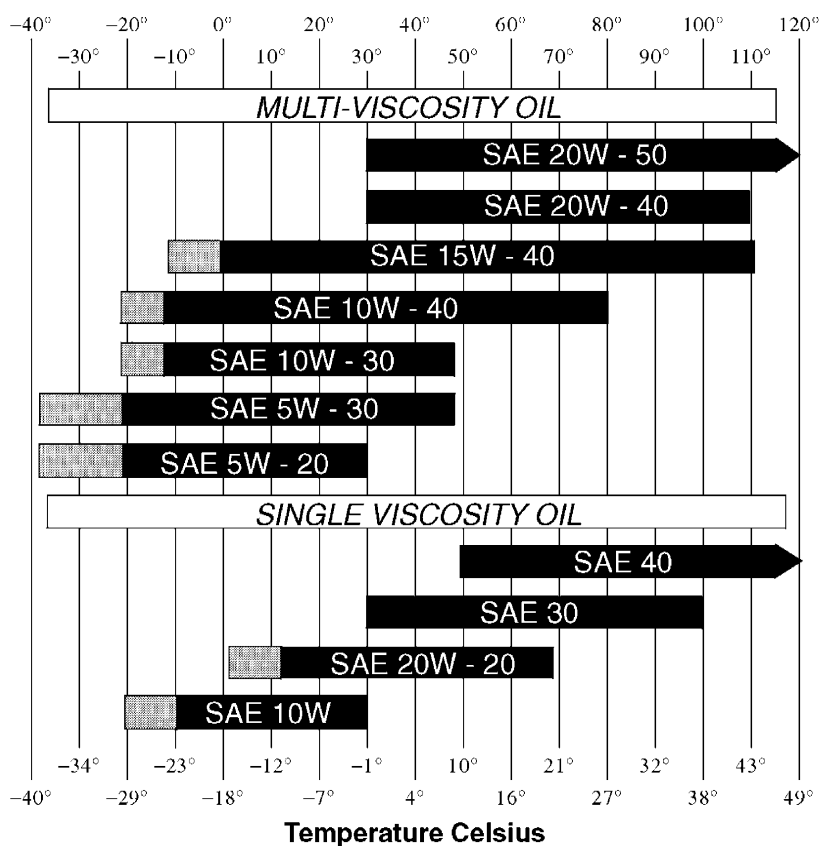
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See the chart below for recommended viscosity at ambient air temperature ranges.

**NOTE:** Do not put performance additives or other oil additive products in the engine crankcase. The oil change intervals given in this manual are according to tests with Case lubricants.

### Oil Viscosity / Temperature Ranges

Temperature Fahrenheit



**NOTE:** Use of an engine oil pan heater or an engine coolant heater is required when operating temperatures are in the shaded area.



## DIESEL FUEL SYSTEM

Use No. 2 diesel fuel in the engine of this machine. The use of other fuels can cause the loss of engine power and high fuel consumption.

In very cold temperatures, a mixture of No. 1 and No. 2 diesel fuels is temporarily permitted. See the following Note.

**NOTE:** *See your fuel dealer for winter fuel requirements in your area. If the temperature of the fuel lowers below the cloud point (wax appearance point), wax crystals in the fuel will restrict the fuel filter and cause the engine to lose power or not start.*

The diesel fuel used in this machine must meet the specifications shown below in, "Specifications for Acceptable No. 2 Diesel Fuel", or Specification D975-81 of the American Society for Testing and Materials.

### Fuel Storage

If you keep fuel in storage for a period of time, you can get foreign material or water in the fuel storage tank. Many engine problems are caused by water in the fuel.

Keep the fuel storage tank outside and keep the fuel as cool as possible. Remove water from the storage container at regular periods of time.

Fill the fuel tank at the end of the daily operating period to prevent condensation in the fuel tank.

### Specifications for Acceptable No. 2 Diesel Fuel

|   |  |
|---|--|
| API gravity, minimum .....                        | 34   |
| Flash point, minimum .....                        | 140°F (60°C)                               |
| Cloud point (wax appearance point), maximum ..... | -5°F (-20°C) See Note above                |
| Pour point, maximum .....                         | -15°F (-26°C) See Note above               |
| Distillation temperature, 90% point .....         | 540 to 640°F (282 to 338°C)                |
| Viscosity, at 100°F (38°C)                        |  |
| Centistokes .....                                 | 2.0 to 4.3                                 |
| Saybolt seconds universal .....                   | 32 to 40                                   |
| Cetane number, minimum .....                      | 43 (45 to 55 for winter or high altitudes) |
| Water and sediment, by volume .....               | 0.05 of 1%                                 |
| Sulphur, by weight, maximum .....                 | 0.5 of 1%                                  |
| Copper strip corrosion, maximum .....             | No. 2                                      |
| Ash, by weight, maximum .....                     | 0.01 of 1%                                 |

# MAINTENANCE SCHEDULE

## Model 821C

### Instructions

#### AS REQUIRED

---

|   |                      |
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| 22 SERVICE THE AIR CLEANER IF THE AIR CLEANER WARNING LAMP ILLUMINATES.....           | SEE OPERATORS MANUAL |
| 37 SERVICE AIR CLEANER PRECLEANER.....  | SEE OPERATORS MANUAL |
| 30 REPLACE THE TRANSMISSION FILTER  |                      |
| IF THE TRANSMISSION FILTER RESTRICTION WARNING LAMP ILLUMINATES .....                 | USE CASE FILTER      |
| 19 CHECK THE RADIATOR COOLANT LEVEL IF THE WARNING LAMP ILLUMINATES .....             | SEE OPERATORS MANUAL |
| 6 REPLACE THE HYDRAULIC FILTERS IF THE HYDRAULIC FILTER WARNING LAMP ILLUMINATES..... | USE CASE FILTERS     |
| 20 CHECK THE FAN BELT CONDITION.....  | REPLACE AS REQUIRED  |
| CHECK THE AIR CONDITIONING DRIVE TENSION (IF EQUIPPED) NOT SHOWN.....                 | ADJUST AS REQUIRED   |

---

#### EVERY 10 HOURS OF OPERATION OR EACH DAY- WHICHEVER OCCURS FIRST

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|                                    |                      |
|------------------------------------|----------------------|
| 16 CHECK THE ENGINE OIL LEVEL..... | SEE OPERATORS MANUAL |
|------------------------------------|----------------------|

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#### EVERY 50 HOURS OF OPERATION

---

|  |                           |
|--|---------------------------|
| 1 CHECK THE COOLANT RESERVOIR FLUID LEVEL.....                         | ETHYLENE GLYCOL AND WATER |
| 29 CHECK THE TRANSMISSION OIL LEVEL (ENGINE RUNNING AND OIL WARM)..... | SEE OPERATORS MANUAL      |
| 5 CHECK THE HYDRAULIC RESERVOIR FLUID LEVEL.....                       | SEE OPERATORS MANUAL      |
| 15 LUBRICATE THE REAR AXLE TRUNNION PIVOTS (2 FITTINGS).....           | CASE MOLYDISULFIDE GREASE |
| 27 LUBRICATE THE CENTER DRIVE SHAFT SLIP JOINT (1 FITTING).....        | CASE MOLYDISULFIDE GREASE |

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#### EVERY 100 HOURS OF OPERATION

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|   |                           |
|---|---------------------------|
| 10 LUBRICATE THE BUCKET PIVOT POINTS (3 FITTINGS).....                          | CASE MOLYDISULFIDE GREASE |
| 7 LUBRICATE THE STEERING CYLINDER PIVOTS - ROD AND CLOSED END (4 FITTINGS)..... | CASE MOLYDISULFIDE GREASE |
| 9 LUBRICATE THE LOADER PIVOT POINTS (10 FITTINGS).....                          | CASE MOLYDISULFIDE GREASE |
| 26 LUBRICATE THE FRONT DRIVE SHAFT SUPPOTT BEARING (1 FITTING).....             | CASE MOLYDISULFIDE GREASE |
| 32 LUBRICATE THE REAR DRIVE SHAFT SLIP JOINT (1 FITTING).....                   | CASE MOLYDISULFIDE GREASE |
| 35 LUBRICATE THE REAR DRIVE SHAFT SLIP JOINT (1 FITTING).....                   | CASE MOLYDISULFIDE GREASE |

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#### EVERY 250 HOURS OF OPERATION

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|  |                           |
|--|---------------------------|
| 19 CHECK THE RADIATOR COOLANT LEVEL.....                       | ETHYLENE GLYCOL AND WATER |
| 2 CHANGE THE ENGINE OIL AND REPLACE THE ENGINE OIL FILTER..... | SEE OPERATORS MANUAL      |
| 34 CHECK THE BATTERY FLUID LEVEL.....                          | SEE OPERATORS MANUAL      |
| 36 CHECK THE TIRE CONDITION AND AIR PRESSURE.....              | SEE OPERATORS MANUAL      |
| 12 CLEAN THE CAB AIR FILTERS (IF EQUIPPED).....                | SEE OPERATORS MANUAL      |
| 25 REPLACE ENGINE COOLING SYSTEM FILTER.....                   | USE CASE FILTER           |

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#### EVERY 500 HOURS OF OPERATION

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|   |                      |
|---|----------------------|
| 3 REPLACE THE FUEL FILTERS.....                     | USE CASE FILTERS     |
| 33 DRAIN WATER AND SEDIMENT FROM THE FUEL TANK..... | SEE OPERATORS MANUAL |
| 14 REPLACE THE IN-LINE FUEL FILTER.....             | USE CASE FILTERS     |

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#### EVERY 1000 HOURS OF OPERATION

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|   |                           |
|---|---------------------------|
| 21 CHECK THE ENGINE VALVE CLEARANCES.....                         | SEE SERVICE MANUAL        |
| 6 REPLACE THE HYDRAULIC FILTERS.....                              | USE CASE FILTERS          |
| 30 REPLACE THE TRANSMISSION OIL FILTER.....                       | USE CASE FILTERS          |
| 28 CHANGE THE TRANSMISSION OIL.....                               | SEE OPERATORS MANUAL      |
| 23 CLEAN THE TRANSMISSION BREATHER.....                           | CLEAN WITH SOLVENT        |
| 24 LUBRICATE THE UPPER AND LOWER CHASSIS PIVOTS (2 FITTINGS)..... | CASE MOLYDISULFIDE GREASE |
| 31 CHANGE THE FRONT/REAR AXLE DIFFERENTIAL AND PLANETARY OIL..... | SEE OPERATORS MANUAL      |

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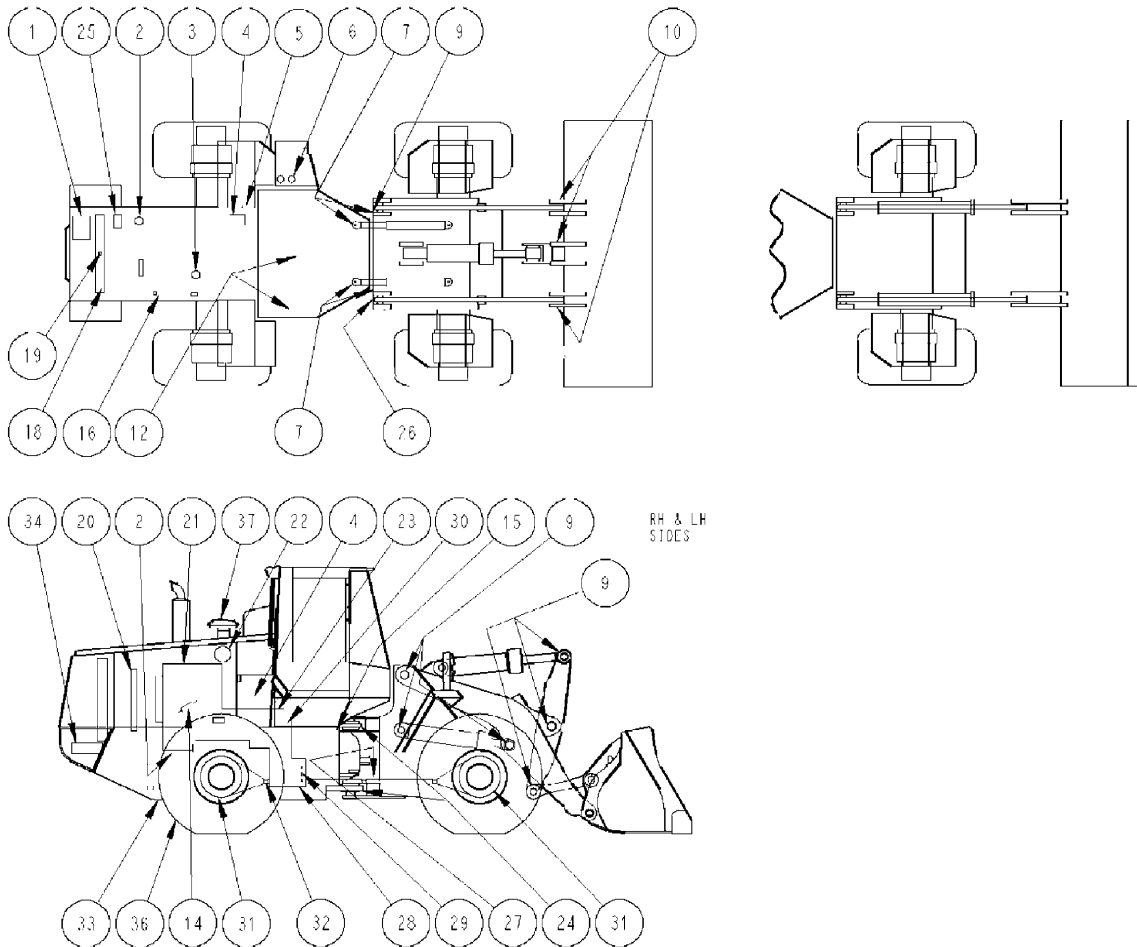
#### EVERY 2000 HOURS OF OPERATION OR EACH YEAR - WHICHEVER OCCURS FIRST

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|   |                           |
|---|---------------------------|
| 4 CHANGE THE HYDRAULIC OIL AND CLEAN THE SCREEN.....      | SEE OPERATORS MANUAL      |
| 18 DRAIN, FLUSH AND REFILL THE ENGINE COOLING SYSTEM..... | ETHYLENE GLYCOL AND WATER |
| 22 REPLACE THE AIR CLEANER ELEMENTS.....                  | USE CASE FILTERS          |

**NOTE:** When you drain, flush and refill the engine cooling system, add one container (0.5L) of Case cooling system treatment, and replace the cooling filter.

# MAINTENANCE SCHEDULE Model 821C



GS98J100

If you operate the machine in severe conditions, lubricate and service the machine more frequently. It is recommended that you see your Case dealer for information on the System Guard Lubrication Analysis System.

See your Operators manual for maintenance of safety related items and for detailed information of the service items on this chart. Operators and service manuals are available for this machine from your Case dealer.

**NOTE:** *The Case Company reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.*

# SECTION INDEX - ENGINE

## Section Title

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# Section 2000

## ENGINE AND RADIATOR REMOVAL AND INSTALLATION

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