750/760/860/960/965 LOADER BACKHOE SERVICE MANUAL

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Section

1001

STANDARD TORQUE SPECIFICATIONS AND LOCTITE PRODUCT CHART

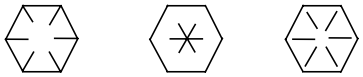
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TORQUES SPECIFICATIONS (DECIMAL HARDWARE)

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.

Grade 5 Bolts, Nuts and Studs		
		
Size	**Pound-inches**	**Newton metres**
1/4 inch	8 to 11	12 to 15
5/16 inch	17 to 21	23 to 28
3/8 inch	35 to 42	48 to 57
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 inchs	800 to 880	1085 to 1193
1-1/4 inchs	1120 to 1240	1519 to 1681
1-3/8 inchs	1460 to 1680	190 to 2278
1-1/2 inchs	1940 to 2200	2631 to 2983

Grade 8 Bolts, Nuts and Studs		
		
Size	**Pound-inches**	**Newton metres**
1/4 inch	12 to 15	16 to 20
5/16 inch	24 to 29	33 to 39
3/8 inch	45 to 54	61 to 73
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 inchs	1280 to 1440	1736 to 1953
1-1/4 inchs	1820 to 2000	2468 to 2712
1-3/8 inchs	2380 to 2720	3227 to 3688
1-1/2 inchs	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.

Grade 8.8 Bolts, Nuts and Studs		
		
Size	**Pound-inches**	**Newton metres**
M4	2 to 3	3 to 4
M5	5 to 6	7 to 8
M6	8 to 9	11 to 12
M8	19 to 23	26 to 31
M10	38 to 45	52 to 61
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

Grade 10.9 Bolts, Nuts and Studs		
		
Size	**Pound-inches**	**Newton metres**
M4	3 to 4	4 to 5
M5	7 to 8	9 to 11
M6	11 to 13	15 to 18
M8	27 to 32	37 to 43
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 Hose ID	Thread size	Pound-inches	Newton metres
37 Degree flare fitting			
1/4 inch/ 6.4 mm	7/16-20	6 to 12	8 to 16
5/16 inch/ 7.9 mm	1/2-20	8 to 16	11 to 22
3/8 inch/ 9.5 mm	9/16-18	10 to 25	14 to 34
1/2 inch/ 12.7 mm	3/4-16	15 to 42	20 to 57
5/8 inch/ 15.9	7/8-14	25 to 58	34 to 79
3/4 inch/ 19.0 mm	1-1/16-12	40 to 80	54 to 108
7/8 inch/ 22.2 mm	1-3/16-12	60 to 100	81 to 135
1.0 inch/ 25.4 mm	1-5/16-12	75 to 117	102 to 158
1-1/4 inch/ 31.8 mm	1-5/8-12	125 to 165	169 to 223
1-1/2 inch/ 38.1 mm	1-7/8-12	210 to 250	285 to 338

Tube OD Hose ID	Thread size	Pound-inches	Newton metres
Straight threads with O-ring			
1/4 inch/ 6.4 mm	7/16-20	12 to 19	16 to 26
5/16 inch/ 7.9 mm	1/2-20	16 to 24	22 to 34
3/8 inch/ 9.5 mm	9/16-18	24 to 40	34 to 54
1/2 inch/ 12.7 mm	3/4-16	42 to 67	57 to 91
5/8 inch/ 15.9	7/8-14	58 to 92	79 to 124
3/4 inch/ 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch/ 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch/ 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch/ 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch/ 38.1 mm	1-7/8-12	250 to 400	339 to 542

Split flange mounting screws		
Size	Pound-inches	Newton metres
5/16-18	15 to 20	20 to 27
3/8-16	27 to 40	36 to 53
7/16-14	35 to 45	47 to 61
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
O-ring face seal end					**O-ring boss end fitting or lock nut**		
-4	1/4 inch/ 6.4 mm	9/16-18	10 to 12	14 to 16	7/16-20	17 to 20	23 to 27
-6	3/8 inch/ 9.5 mm	11/16-16	18 to 20	24 to 27	9/16-18	25 to 30	34 to 41
-8	1/2 inch/ 12.7 mm	13/16-16	32 to 40	43 to 54	3/4-16	45 to 50	61 to 68
-10	5/8 inch/ 15.9 mm	1-14	46 to 56	62 to 76	7/8-14	60 to 65	81 to 88
-12	3/4 inch/ 19.0 mm	1-3/16-12	65 to 80	90 to 110	1-1/16-12	85 to 90	115 to 122
-14	7/8 inch/ 22.2 mm	1-3/16-12	65 to 80	90 to 110	1-3/16-12	95 to 100	129 to 136
-16	1.0 inch/ 25.4 mm	1-7/16-12	92 to 105	125 to 140	1-5/16-12	115 to 125	156 to 169
-20	1-1/4 inch/ 31.8 mm	1-11/16-12	125 to 140	170 to 190	1-5/8-12	150 to 160	203 to 217
-24	1-1/2 inch/ 38.1 mm	2-12	150 to 180	200 to 254	1-7/8-12	190 to 200	258 to 271

LOCTITE PRODUCT CHART

Product	Colour	Similar products	Gap (inches)	Strength (steel/steel)	Working temperature range-fahrenheit	Fixture/full cure (steel/steel) time	Primer	Description
#3	Dark brown					24 h	764	Form a Gasket (works with oil, fuel or greas) Pliable
80	Yellow					Fast	764	Weatherstrip adhesive
123	Clear					-	-	Parts cleaner fluid
220	Blue	290	0.076	65/164 in lbs	-54 to +122	6 min/24 h	747	Wicking threadlocker
221	Purple	222	0.127	86/50 in lbs	-54 to +150	2 min/24 h	747	Low strength threadlocker
222	Purple		0.127	51/28 in lbs	-54 to +150	10 min/24 h	747	Low strength threadlocker (small screws)
225	Brown	222	0.254	51/28 in lbs	-54 to +150	7 min/24 h	747	Low strength threadlocker
242	Blue		0.127	92/57 in lbs	-54 to +150	10 min/24 h	747	Medium strength threadlocker
262	Red	271	0.127	184/218 in lbs	-54 to +150	5 min/24 h	747	High strength threadlocker
270	Green	271	0.177	184/368 in lbs	-54 to +150	3 min/24 h	747	High strength threadlocker
271	Red	262	0.177	184/368 in lbs	-54 to +150	10 min/24 h	747	High strength threadlocker
272	Red	620	0.254	207/311 in lbs	-54 to +234	30 min/24 h	747	High temperature, high strength
275	Green	277	0.254	241/345 in lbs	-54 to +150	3 min/24 h	747	High strength threadlocker
277	Red		0.254	241/345 in lbs	-54 to +150	60 min/24 h	747	High strength threadlocker
290	Green		0.076	97/403 in lbs	-54 to +150	6 min/24 h	747	Wicking threadlocker
*404	Clear	495	0.156	224 psi	-54 to +82	30 sec/24 h	-	Instant adhesive
*406	Clear		0.101	224 psi	-54 to +82	15 sec/24 h	-	Surface insensitive adhesive
*409	Clear	454	0.203	175 psi	-54 to +82	50 sec/24 h	-	Gel instant adhesive
*414	Clear		0.156	175 psi	-54 to +82	30 sec/24 h	-	Instant adhesive
*415	Clear	454	0.254	175 psi	-54 to +82	50 sec/24 h	-	Gap filling instant adhesive (metals)
*416	Clear	454	0.254	175 psi	-54 to +82	50 sec/24 h	-	Gap filling instant adhesive (plastics)
*420	Clear		0.05	175 psi	-54 to +82	15 sec/24 h	-	Wicking instant adhesive
*422	Clear	454	0.05	196 psi	-54 to +82	60 sec/24 h	-	Gap filling instant adhesive
*430	Clear		0.127	175 psi	-54 to +82	20 sec/24 h	-	Metal bonding adhesive

* Products 404-496 (except for #445) are all instant adhesives (super glues) they differ mostly in viscosity.

Product	Colour	Similar products	Gap (inches)	Strength (steel/steel)	Working temperature range-fahrenheit	Fixture/full cure (steel/steel) time	Primer	Description
*445	White/ Black		6.35	140 psi	-54 to +82	5 min/24 h	-	Fast setting 2 part epoxy
*454	Clear		0.254	224 psi	-54 to +82	15 sec/24 h	-	Surface insensitive gel instant adhesive
*495	Clear		0.101	175 psi	-54 to +82	20 sec/24 h	-	General purpose instant adhesive
*496	Clear		0.127	175 psi	-54 to +82	20 sec/24 h	-	Metal bonding adhesive
504	Brt orange	515	0.076	52 psi	-54 to +150	90 sec/24 h	None	Rigid gasket eliminator
510	Red		0.05	70 psi	-54 to +206	30 min/24 h	764	High temperature, gasket eliminator
515	Purple		0.254	52 psi	-54 to +150	1 hr/24 h	764	Gasket eliminator 515
518	Red	515	0.076	35 psi	-54 to +150	1 hr/24 h	764	Gasket eliminator 578 for aluminum
542	Brown	569	-	152/106 in lbs	-54 to +150	2 hr/24 h	747	Hydraulic sealant
545	Purple		-	28/23 in lbs	-54 to +150	4 hr/24 h	747	Low strength pneumatic/hydraulic sealant
549	Red	504	0.05	175 psi	-54 to +150	2 hr/24 h	747	Instant seal plastic gasket
554	White	277	0.381	276/240 in lbs	-54 to +150	2 to 4 hr/24 h	764	Refrigerant sealant
567	Orange	592	-	35 psi	-54 to +206	4 hr/24 h	764	Pipe sealant for stainless steel
568	Brown	277	0.381	175 psi	-54 to +150	12 hr/24 h	764	Plastic gasket
569	Brown	545	0.254	28/46 in lbs	-54 to +150	1 hr/24 h	764	Hydraulic sealant
570	Brown	592	-	28/46 in lbs	-54 to +150	6 hr/24 h	764	Steam sealant
571	White	592	0.381	46/23 in lbs	-54 to +150	2 to 4 hr/24 h	764	Pipe sealant
572	White	578. 575	-	92/31in lbs	-54 to +150	24 hr/24 h	None	Gasketing
592	Black	-	0.05	35 psi	-54 to +206	4 hr/24 h	736	Pipe sealant with teflon
593	Green	-	6.35	28 psi	-54 to +206	30 min/24 h	-	RTV silicone
601	Green	609	0.127	210 psi	-54 to +150	10 min/24 h	747	Current PIN #609
609	Green	-	0.127	210 psi	-54 to +150	10 min/24 h	747	General purpose retaining compound
620	Green	640	0.381	210 psi	-54 to +234	30 min/24 h	747	High temperature. Retaining coumpound
635	Green	680	0.254	280 psi	-54 to +150	1 hr/24 h	747	High strength retaining compound
638	Green	680	0.381	287 psi	-54 to +150	10 min/24 h	747	High strength retaining compound
640	Green	620	0.177	210 psi	-54 to +206	1 hr/24 h	747	High temperature retaining compound
660	Silver	-	0.05	210 psi	-54 to +150	20 min/24 h	764	Quick metal
675	Green	609	0.127	210 psi	-54 to +150	20 min/24 h	747	General purpose retaining compound
680	Green	635	0.381	280 psi	-54 to +150	10 min/24 h	747	High strength retaining compound
706	Clear	755	-	-	-	-	-	Cleaning solvent
707	Amber	-	-	-	-	-	-	Activator for structual adhesives
736	Amber	-	-	-	-	-	-	Primer NF
738	Amber	-	-	-	-	-	-	Depend activator

Product	Colour	Similar products	Gap (inches)	Strength (steel/steel)	Working temperature range-fahrenheit	Fixture/full cure (steel/steel) time	Primer	Description
747	Yellow	-	-	-	-	-	-	Primer T
751	Clear	-	-	-	-	-	-	Activator for structural adhesives
755	Clear	-	-	-	-	-	-	Cleaning solvent
764	Green	-	-	-	-	-	-	Primer N
767	Silver	-	-	-	-54 to +878	-	-	Anti-seize lubricant

Section

1002

FLUIDS AND LUBRICANTS

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CAPACITIES AND LUBRICANTS

Engine Oil
- Capacity with filter replacement ..... 10.7 litres
- Type of oil ..... refer to “Engine oil recommendations”

Engine cooling system
- Capacity ..... 16.5 litres
- Type of collant solution ..... refer to “Fluids and lubricants”

Fuel tank
- Capacity ..... 120 litres
- Type of fuel ..... refer to “Fluids and lubricants"

Hydraulic system
- Total hydraulic system capacity model 750..... 90 litres
- Total hydraulic system capacity model 760..... 90 litres
- Total hydraulic system capacity model 860..... 90 litres
- Total hydraulic system capacity model 960..... 90 litres
- Total hydraulic system capacity model 965..... 90 litres
- Hydraulic reservoir filling capacity with filter replacement ..... 45 litres
- Hydraulic reservoir filling capacity without filter replacement ..... 43 litres
- Type of fluid ..... refer to “Fluids and lubricants”

Transmission
- 2-Wheel drive
  - Total system ..... 19 litres
  - Filling with or without filter replacement ..... 15 litres
  - Type of oil ..... API cd/se grade 10W30
- 4-Wheel drive
  - Total system ..... 19 litres
  - Filling with or without filter replacement ..... 15 litres
  - Type of oil ..... API cd/se grade 10W30

Front Axle
- 4-Wheel steer
  - Axle centre housing ..... 8 litres
  - Axle hubs (each) ..... 4.5 litres
  - Type of oil ..... HI LOAD GEAR OIL
- 2-Wheel steer
  - Axle centre housing ..... 8 litres
  - Axle hubs (each) ..... 1.1 litre
  - Type of oil ..... HI LOAD GEAR OIL

Rear axle
- 4-Wheel steer
  - Axle centre housing ..... 8 litres
  - Axle hubs (each) ..... 4.5 litres
  - Type of oil ..... HI LOAD GEAR OIL
- 2-Wheel steer
  - Capicity ..... 22.5 litres
  - Type of oil ..... HI LOAD GEAR OIL

Brake fluid reservoir ..... LHM brake fluid



ENGINE OIL RECOMMENDATIONS

The engine oil to be used depends on the ambient temperature.

Use only oil of the API/CD category.

NOTE : *Do not put any performance additive or other additive in the sump. Oil change intervals shown in this manual are based on tests carried out on lubricants.*

Temperate climates

-5°C to +40°C
Oil type SAE 30

Hot climates

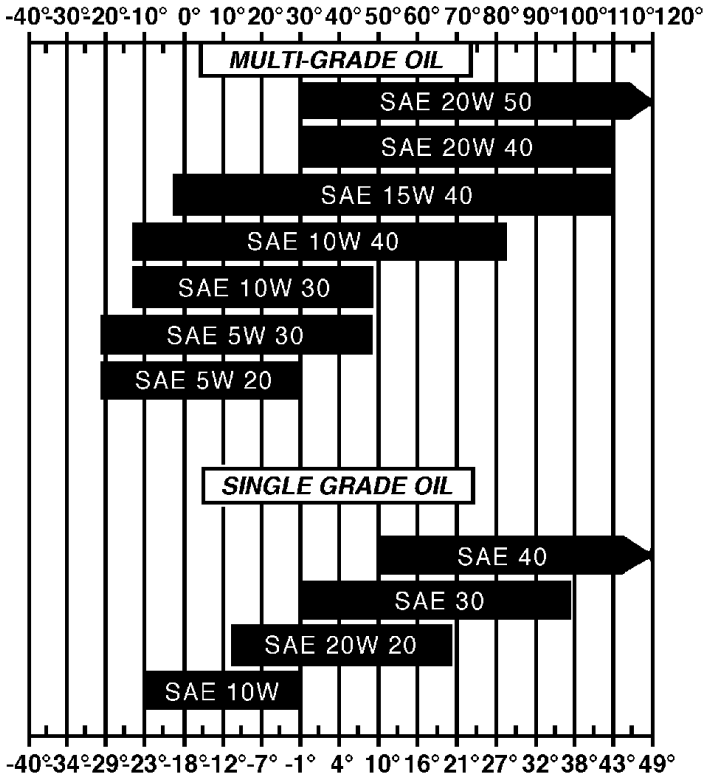
60°C and +
Oil type SAE 40

Cold climates

-30°C to + 10°C
Oil type SAE 10W30

Oil viscosity/Oil operating range

A



B

IO36LO

A : FAHRENHEIT TEMPERATURE
B : CENTIGRADE TEMPERATURE

FLUIDS AND LUBRICANTS

Fluids and lubricants must have the correct properties for each application.

WARNING : *The conditions of use for individual fluids and lubricants must be respected.*

Hydraulic fluid

Hydraulic fluid is specially designed for the high pressure and the hydraulic system used on machines. The type of fluid to be used depends on the ambient temperature.

Temperate climates

-5°C to +40°C
Fluid type : ISO VG 46

Hot climates

5°C to +55°C
Fluid type : ISO VG 68

Cold climates

-20°C to +30°C
Fluid type : ISO VG 32

Transmission component oil

Extreme pressure oil is used for all cased transmission components.
Extreme pressure oil type API CD/SE.
Grade 10W30 or ISO VG 150

Grease

The type of grease to be used depends on the ambient temperature.

Temperate and hot climates

-20°C to + 60 °C
Extreme pressure grease EP NLGI.
Grade 2 with molybdenum disulphide.

Cold climates

-40 °C to + 20°C
Extreme pressure grease EP NLGI
Grade 0

Anti-freeze/anti-corrosion

Use anti-freeze in all seasons to protect the cooling system from corrosion and all risk of freezing.

For environments with a temperature higher than -36°C, use a mixture of 50% ethylene-glycol based anti-freeze.

For environments with a temperature lower than -36°C, a mixture of 40% water with 60% anti-freeze is recommended.

Fuel

The fuel to be used must be in conformity with the D975 standard of the American Society for Testing and Materials (ASTM).

Use No. 2 type fuel. The use of other fuels may cause a loss of engine power and excessive fuel consumption.

In cold weather, a mixture of No. 1 fuel and No. 2 fuel is temporarily permitted. Consult your fuel supplier.

If the temperature falls below the fuel cloud point (point at which wax appears), wax crystals in the fuel will cause a loss of engine power or make it impossible to start the engine.

IMPORTANT : *In cold weather, fill the fuel tank after each day's work, to prevent the formation of condensation.*

Fuel storage

Prolonged fuel storage causes foreign bodies or condensation water to accumulate in the storage tank. Many engine failures are caused by the presence of water in fuel.

The storage tank should be placed outdoors and the fuel should be kept at as low a temperature as possible. Condensation water should be drained off at regular intervals.

ENVIRONMENT

Before carrying out any maintenance operation on the machine and before disposing of used fluids or lubricants, always think of the environment. Never throw oil or fluid on the ground and never put them in leaky receptacles.

Consult a local recycling or environmental centre, to obtain information on the correct method of disposing of these materials.

PLASTIC AND RESIN PARTS

When cleaning plastic windows, the console, the instrument panel, the gauges, etc, avoid the use of petrol, paraffin, paint solvents, etc. Use only water, soap and a soft cloth.

The use of petrol, paraffin, paint solvents, etc will cause discoloration, cracks or deformation of these parts.

Section

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ENGINE AND RADIATOR
REMOVAL AND INSTALLATION