

550E Crawler  
Service Manual

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# Section 1001

## STANDARD TORQUE SPECIFICATIONS

**Thanks very much for your reading,  
Want to get more information,  
Please click here, Then get the complete  
manual**

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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 graphites, molydisulfide greases, or other extreme pressure lubricants are used.


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


<b>Grade 8 Bolts, Nuts, and Studs</b>		
		
Size	Pound-Inches	Newton metres
1/4 in	144-180	16-20
5/16 in	288-348	33-39
3/8 in	540-648	61-73
Size	Pound-Feet	Newton metres
7/16 in	70-84	95-114
1/2 in	110-132	149-179
9/16 in	160-192	217-260
5/8 in	220-264	298-358
3/4 in	380-456	515-618
7/8 in	600-720	814-976
1.0 in	900-1080	1220-1465
1-1/8 in	1280-1440	1736-1953
1-1/4 in	1820-2000	2468-2712
1-3/8 in	2380-2720	3227-3688
1-1/2 in	3160-3560	4285-4827
<b>NOTE:</b> 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	24-36	3-4
M5	60-72	7-8
M6	96-108	11-12
M8	228-276	26-31
M10	456-540	52-61
Size	Pound-Feet	Newton metres
M12	66-79	90-107
M14	106-127	144-172
M16	160-200	217-271
M20	320-380	434-515
M24	500-600	675-815
M30	920-1100	1250-1500
M36	1600-1950	2175-2600

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

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

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
<b>Straight Threads with O-ring</b>			
1/4 in 6.4 mm	7/16-20	144-228	16-26
5/16 in 7.9 mm	1/2-20	192-300	22-34
3/8 in 9.5 mm	9/16-18	300-480	34-54
1/2 in 12.7 mm	3/4-16	504-804	57-91
Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
5/8 in 15.9 mm	7/8-14	58-92	79-124
3/4 in 19.0 mm	1-1/16-12	80-128	108-174
7/8 in 22.2 mm	1-3/16-12	100-160	136-216
1.0 in 25.4 mm	1-5/16-12	117-187	159-253
1-1/4 in 31.8 mm	1-5/8-12	165-264	224-357
1-1/2 in 38.1 mm	1-7/8-12	250-400	339-542

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



## TORQUE SPECIFICATIONS - O-RING FACE SEAL 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 in 6.4 mm	9/16-18	120-144	14-16	7/16-20	204-240	23-27
-6	3/8 in 9.5 mm	11/16-16	216-240	24-27	9/16-18	300-360	34-41
-8	1/2 in 12.7 mm	13/16-16	384-480	43-54	3/4-16	540-600	61-68
-10	5/8 in 15.9 mm	1-14	552-672	62-76	Thread Size	Pound-Feet	Newton metres
Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Feet	Newton metres	1-1/16-12	85-90	115-122
-12	3/4 in 19.0 mm	1-3/16-12	65-80	90-110	1-3/16-12	95-100	129-136
-14	7/8 in 22.2 mm	1-3/16-12	65-80	90-110	1-5/16-12	115-125	156-169
-16	1.0 in 25.4 mm	1-7/16-12	92-105	125-140	1-5/8-12	150-160	203-217
-20	1-1/4 in 31.8 mm	1-11/16-12	125-140	170-190	1-7/8-12	190-200	258-271
-24	1-1/2 in 38.1 mm	2-12	150-180	200-254			



# Section 1002

## FLUIDS AND LUBRICANTS

## CAPACITIES AND LUBRICANTS

### Engine Oil

Capacity with Filter Change ..... 11 U.S. quarts (10.4 litres)

Type of oil..... See Engine Oil Recommendations on page 3.

### Engine Cooling System

Capacity..... 16.5 U.S. quarts (15.6 litres)

Type of coolant..... Ethylene glycol and water mixed for lowest ambient temperature  
At least 50/50 mixture

### Fuel Tank

Capacity..... 30.5 U.S. gallons (115.5 litres)

Type of fuel..... No. 1 Diesel fuel

### Hydraulic System

Hydraulic reservoir refill capacity ..... 10.3 U.S. gallons (39 litres)

Type of oil..... Case TCH Fluid

### Transmission

Capacity..... 8 U.S. gallons (30.3 litres)

Type of oil..... Case TCH Fluid

### Final Drives

Refill capacity (each side) ..... 6 U.S. quarts (5.7 litres)

Type of oil..... Case IH 135-H EP gear lube

## ENGINE LUBRICATION

### 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.

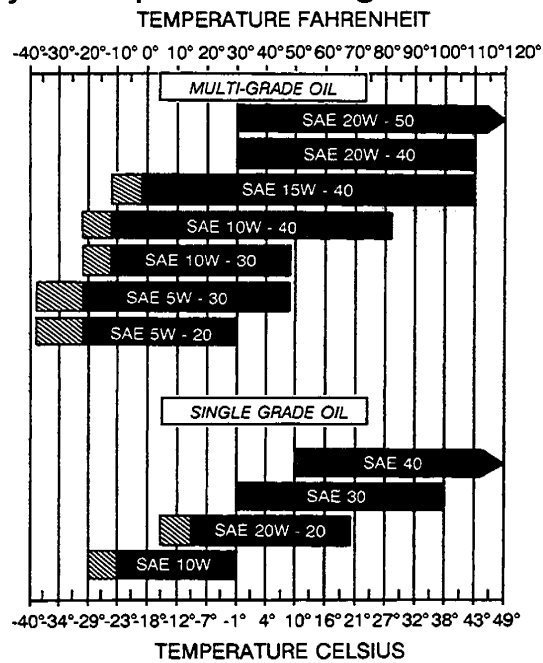


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See the chart below for recommended viscosity at ambient air temperature ranges.

**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



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



# LOCTITE PRODUCT CHART

Product	Color	Similar Products	Gap (In Inches)	Strength (Steel/Steel)	Working Temperature Range-Fahrenheit	Fixture/Full Cure (Steel/Steel) Time	Primer	Description
#3	Dark Brown					24 hr	N/A	Form a Gasket (works with oil, fuel or grease) Pliable
80	Yellow					Fast	N/A	Weatherstrip Adhesive
123	Clear					N/A	N/A	Parts Cleaner Fluid
220	Blue	290	0.003	57/143 in lbs	-65 to +250	6 min/24 hrs	747	Wicking Threadlocker
221	Purple	222	0.005	75/44 in lbs	-65 to +300	2 min/24 hrs	747	Low Strength Threadlocker
222	Purple		0.005	53/30 in lbs	-65 to +300	20 min/24 hrs	764	Low Strength Threadlocker (Small Screws)
225	Brown	222	0.010	45/25 in lbs	-65 to +300	7 min/24 hrs	747	Low Strength Threadlocker
242	Blue		0.005	80/50 in lbs	-65 to +300	10 min/24 hrs	764	Medium Strength Threadlocker
262	Red	271	0.005	160/190 in lbs	-65 to +300	5 min/24 hrs	747	High Strength Threadlocker
270	Green	271	0.007	160/320 in lbs	-65 to +300	3 min/24 hrs	747	High Strength Threadlocker
271	Red	262	0.007	160/320 in lbs	-65 to +300	10 min/24 hrs	764	High Strength Threadlocker
272	Red	620	0.007	180/220 in lbs	-65 to +450	30 min/24 hrs	764	High Temperature, High Strength
275	Green	277	0.010	210/300 in lbs	-65 to +300	3 min/24 hrs	747	High Strength Threadlocker
277	Red		0.010	225/300 in lbs	-65 to +300	60 min/24 hrs	764	High Strength Threadlocker
290	Green		0.003	85/350 in lbs	-65 to +300	6 min/24 hrs	764	Wicking Threadlocker
*404	Clear	495	0.006	3200 psi	-65 to +180	30 sec/24 hrs	N/A	Instant Adhesive
*406	Clear		0.004	3200 psi	-65 to +180	15 sec/24 hrs	N/A	Surface Insensitive Adhesive
*409	Clear	454	0.008	2500 psi	-65 to +180	50 sec/24 hrs	N/A	Gel Instant Adhesive
*414	Clear		0.006	2500 psi	-65 to +180	30 sec/24 hr	N/A	Instant Adhesive
*415	Clear	454	0.010	2500 psi	-65 to +180	50 sec/24 hrs	N/A	Gap Filling Instant Adhesive (Metals)
*416	Clear	454	0.010	2500 psi	-65 to +180	50 sec/24 hrs	N/A	Gap Filling Instant Adhesive (Plastics)
*420	Clear		0.002	2500 psi	-65 to +180	15 sec/24 hrs	N/A	Wicking Instant Adhesive
*422	Clear	454	0.020	2800 psi	-65 to +180	60 sec/24 hrs	N/A	Gap Filling Instant Adhesive
*430	Clear		0.005	2500 psi	-65 to +180	20 sec/24 hrs	N/A	Metal Bonding Adhesive
*445	White/Black		0.250	2000 psi	-65 to +180	5 min/24 hrs	N/A	Fast Setting 2 Part Epoxy
*454	Clear		0.010	3200 psi	-65 to +180	15 sec/24 hrs	N/A	Surface Insensitive Gen Instant Adhesive
*495	Clear		0.004	2500 psi	-65 to +180	20 sec/24 hrs	N/A	General Purpose Instant Adhesive
*496	Clear		0.005	2500 psi	-65 to +180	20 sec/24 hrs	N/A	Metal Bonding Adhesive
504	Brt Orange	515	0.030	750 psi	-65 to +300	90 min/24 hrs	None	Rigid Gasket Eliminator
509	Light Blue		0.020	750 psi	-65 to +320	6 hr/72 hrs	764	Flange Sealant
510	Red		0.020	1000 psi	-65 to +400	30 min/24 hrs	764	High Temperature, Gasket Eliminator
515	Purple		0.010	750 psi	-65 to +300	1 hr/24 hrs	764	Gasket Eliminator 515

# LOCTITE PRODUCT CHART

Product	Color	Similar Products	Gap (In Inches)	Strength (Steel/Steel)	Working Temperature Range-Fahrenheit	Fixture/Full Cure (Steel/Steel) Time	Primer	Description
518	Red	515	0.030	500psi	-65 to +300	1 hr/24 hrs	764	Gasket Eliminator 518 for Aluminum
542	Brown	569	N/A	132/92 in lbs	-65 to +300	2 hr/24 hrs	747	Hydraulic Sealant
545	Purple		N/A	25/20 in lbs	-65 to +300	4 hr/24 hrs	747	Low Strength Pneumatic/Hydraulic Sealant
549	Orange	504	0.020	2500 psi	-65 to +300	2 hr/24 hrs	747	Instant Seal Plastic Gasket
554	Red	277	0.015	240/240 in lbs	-65 to +300	2 to 4 hrs/24 hrs	764	Refrigerant Sealant
567	White	592	N/A	500 psi	-65 to +400	4 hrs/24 hrs	764	Pipe Sealant for Stainless Steel
568	Orange	277	0.015	2500 psi	-65 to +300	12 hrs/24 hrs	764	Plastic Gasket
569	Brown	545	0.010	40/25 in lbs	-65 to +300	1 hr/24 hrs	764	Hydraulic Sealant
570	Brown	592	N/A	25/40 in lbs	-65 to +300	6 hrs/72 hrs	764	Steam Sealant
571	Brown	592	0.015	40/20 in lbs	-65 to +300	2 to 4 hrs/24 hrs	764	Pipe Sealant
572	White	578.575	N/A	80/27 in lbs	-65 to +300	24 hrs/72 hrs	None	Gasketing
592	White		0.020	500 psi	-65 to +400	4 hrs/72 hrs	736	Pipe Sealant with Teflon
593	Black		0.250	400 psi	-95 to +400	30 min/24 hrs	N/A	RTV Silicone
601	Green	609	0.005	3000 psi	-65 to +300	10 min/24 hrs	764	Current PIN #609
609	Green		0.005	3000 psi	-65 to +300	10 min/24 hrs	764	General Purpose Retaining Compound
620	Green	640	0.015	3000 psi	-65 to +450	30 min/24 hrs	747	High Temperature Retaining Compound
635	Green	680	0.010	4000 psi	-65 to +300	1 hr/24 hrs	747	High Strength Retaining Compound
638	Green	680	0.015	4100 psi	-65 to +300	10 min/24 hrs	747	High Strength Retaining Compound
640	Green	620	0.007	3000 psi	-65 to +400	1 hr/24 hrs	747	High Temperature Retaining Compound
660	Silver		0.020	3000 psi	-65 to +300	20 min/24 hrs	764	Quick Metal
675	Green	609	0.005	3000 psi	-65 to +300	20 min/24 hrs	747	General Purpose Retaining Compound
680	Green	635	0.015	4000 psi	-65 to +300	10 min/24 hrs	747	High Strength Retaining Compound
706	Clear	755	N/A	N/A	N/A	N/A	N/A	Cleaning Solvent
707	Amber		N/A	N/A	N/A	N/A	N/A	Activator for Structural Adhesives
736	Amber		N/A	N/A	N/A	N/A	N/A	Primer NF
738	Amber		N/A	N/A	N/A	N/A	N/A	Depend Activator
747	Yellow	N/A	N/A	N/A	N/A	N/A	N/A	Primer T
751	Clear		N/A	N/A	N/A	N/A	N/A	Activator for Structural Adhesives
755	Clear		N/A	N/A	N/A	N/A	N/A	Cleaning Solvent
764	Green		N/A	N/A	N/A	N/A	N/A	Primer N
767	Silver		N/A	N/A	-65 to +1600	N/A	N/A	Anti-Seize Lubricant



## SECTION INDEX - ENGINE

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# Section 2000

## ENGINE STALL TESTS

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### GENERAL INFORMATION

During these tests the engine runs at full throttle and works against the torque converter, the hydraulic pump, or both the torque converter and the hydraulic pump. The results of these tests can show if the cause for bad performance is in the engine, in the torque converter or transmission, or in the hydraulic system.

For accurate results, use a photo tachometer or other tachometer of equal accuracy.

## SPECIFICATIONS

Temperature of transmission oil .....210°F (99°C) pointer in center of green zone of temperature gauge

Temperature of hydraulic oil ..... 125 to 175°F (52 to 79°C)

Stall speeds	without turbocharger	with turbocharger
Torque converter		
Run-in engine	1921 to 2031 rpm (r/min)	1933 to 2063 rpm (r/min)
New engine	1849 to 2031 rpm (r/min)	1861 to 2063 rpm (r/min)
Hydraulic	2200 rpm (r/min) minimum	2200 rpm (r/min) minimum
Combined torque converter and hydraulic		
Run-in engine	1486 to 1676 rpm (r/min)	1526 to 1701 rpm (r/min)
New engine	1352 to 1676 rpm (r/min)	1408 to 1701 rpm (r/min)

## SPECIAL TOOL

The special tool is used to check the engine rpm (r/min).

The tool must be programmed for the number of teeth on the flywheel. The 550E Crawler has 159 teeth on the flywheel.

Install the magnetic sensor into the threaded hole in the flywheel housing. Turn the magnetic sensor clockwise until the sensor contacts the flywheel, then turn the sensor counterclockwise 1/2 to 3/4 of a turn and tighten the lock nut.



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## PROCEDURE TO HEAT THE OIL

### Torque Converter

1. Do the following steps to check the brakes:
  - a. Apply the center brake pedal.
  - b. Put the range control lever in LO.
  - c. Start and run the engine at low idle.
  - d. Put the track speed control levers in HI.
  - e. Put the direction control lever in F.
  - f. Slowly increase the engine speed to full throttle. If the brakes do not keep the machine from moving, stop the engine.
  - g. See Section 9000 and adjust the brakes.
  - h. Repeat steps 1a through 1g until the center brake pedal keeps the machine from moving with the engine running at full throttle.
2. Run the engine at low idle. Apply the center brake pedal.
3. Put the range control lever in HI.
4. Put both track speed control levers in HI.
5. Put the direction control lever in F.

6. Run the engine at full throttle with the direction control lever in F for two minutes. Then reduce engine speed to low idle and put the direction control lever in NEUTRAL.

7. Run the engine at full throttle with the direction control lever in NEUTRAL for one minute. Then reduce engine speed to low idle and put the direction control lever in F.

8. Repeat steps 6 and 7 until the needle in the temperature gauge is in the green zone.

### Hydraulic System

1. Put the transmission control levers in NEUTRAL.
2. Start and run the engine at full throttle.
3. Put the blade control lever in TILT position.
4. Hold the blade control lever in the TILT position for 15 seconds. Then put the blade control lever in NEUTRAL for 30 seconds.
5. Repeat steps 3 and 4 until the temperature of the hydraulic oil is between 125 and 175°F (52 to 79°C). If a thermometer is not available, feel the tube connected to the inlet of the equipment control valve. The tube must be very warm.