

521E Wheel Loader Repair Manual 84186213 A - EU

Table of Contents

Description	Section No.
General Tab 1	
Section Index - General	
Standard Torque Specifications	1001
Fluids and Lubricants	1002
Metric Conversion Chart	1003
Engines Tab 2	
Section Index - Engines	
Engine and Radiator Removal and Installation	2000
Stall Tests	2002
After Cooler	2003
For Engine Repair, See the Engine Service Manual 87630273	
Fuel System Tab 3	
Section Index - Fuel System	
For Fuel System Repair, See the Engine Service Manual 87630273	
Electrical Tab 4	
Section Index - Electrical	
Removal and Installation of Starter and Alternator	4001
Electrical Specifications and Troubleshooting	4002
Batteries	4003
Instrument Cluster	4005
Steering Tab 5	
Section Index - Steering	
Removal and Installation of Steering Components	5001
Steering Specifications, Pressure Checks, and Troubleshooting	5002
Steering Cylinders	5005
Center Pivot	5006
Auxiliary Steering Motor and Pump	5008
Joystick Steering System (JSS) (option)	5009

521E Wheel Loader Repair Manual 84186213 A - EU

Table of Contents

	Description	Section No.
Power Train		Tab 6
Section Index - Power Train		
Removal and Installation of Power Train Components		6001
Transmission Specifications, Pressure Checks, and Troubleshooting		6002
Transmission		6003
Front Axle		6004
Rear Axle		6004
Drive Shafts, Center Bearing, and Universal Joints		6005
Wheels and Tires		6006
Transmission Control Valve		6007
Brakes		Tab 7
Section Index - Brakes		
Removal and Installation of Brake Components		7001
Hydraulic Brake Troubleshooting		7002
Brake Pump		7003
Brake Accumulators		7004
Parking Brake		7008
Hydraulics		Tab 8
Section Index - Hydraulics		
How to Read Hydraulic Schematics		8000
Removal and Installation of Hydraulic Components		8001
Hydraulic Specifications, Troubleshooting, and Pressure Checks		8002
Cleaning the Hydraulic System		8003
Loader Control Valve		8005
Cylinders		8006
Coupler Solenoid Locking Valve		8007
Ride Control Accumulator		8013
Ride Control Valve		8014

521E Wheel Loader Repair Manual 84186213 A - EU

Table of Contents

Description	Section No.
Mounted Equipment	Tab 9
Section Index - Mounted Equipment	
Air Conditioning Troubleshooting and System Checks	9002
Air Conditioner System Service	9003
Removal And Installation Of Air Conditioning And Heater Components	9004
Loader	9006
Roll Over Protective Structure (ROPS), Cab Structural Frame (CSF)	9007
Cab Glass Installation	9010
Electrical Schematic Foldouts and Hydraulic Schematic Foldout	In Rear Pocket

SECTION INDEX

GENERAL

Section Title	Section Number
Standard Torque Specifications	1001
Fluids and Lubricants	1002
Metric Conversion Chart	1003

Section 1001

GENERAL TORQUE SPECIFICATIONS

TABLE OF CONTENTS

TORQUE SPECIFICATIONS - DECIMAL HARDWARE	3
TORQUE SPECIFICATIONS - METRIC HARDWARE	4
TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS	5
TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS	6

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.

Grade 5 Bolts, Nuts, and Studs		
		
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

Grade 8 Bolts, Nuts, and Studs		
		
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.

Grade 8.8 Bolts, Nuts, and Studs		
		
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

Grade 10.9 Bolts, Nuts, and Studs		
		
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.

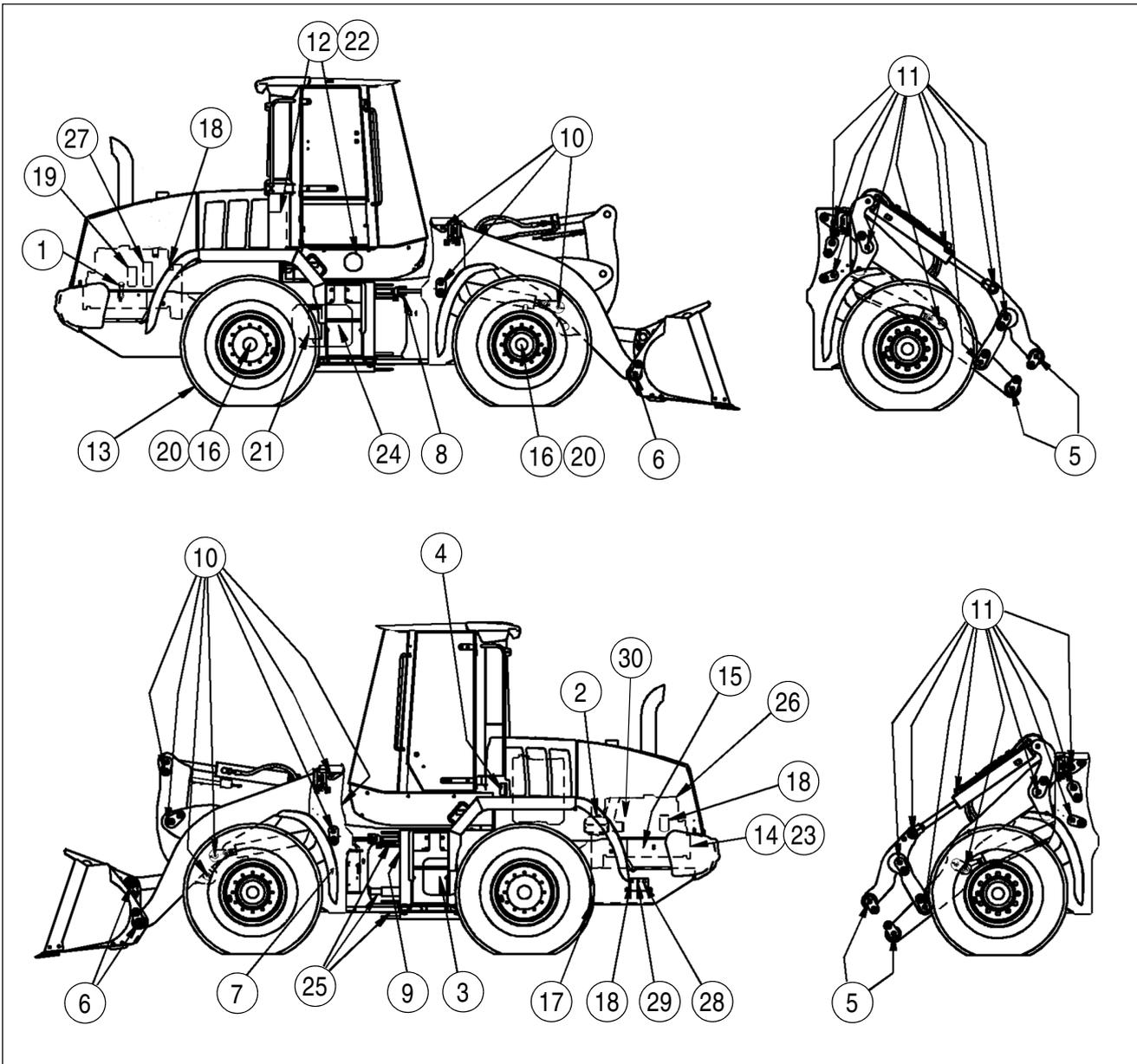
TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

37 Degree Flare Fitting			
Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
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

Straight Threads with O-ring			
Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
5/8 inch 15.9 mm	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 Bolts		
Size	Pound- Inches	Newton 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- Feet	Newton metres
1/2-13	55 to 65	74 to 88
5/8-11	140 to 150	190 to 203

MAINTENANCE POINTS Model 521E



BS08B289

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 dealer.

If you operate the machine in severe conditions, lubricate and service the machine more frequently.

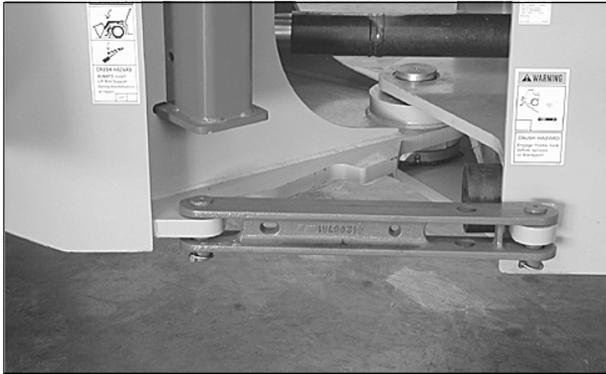
Section 2000

ENGINE AND RADIATOR REMOVAL AND INSTALLATION

ENGINE

Removal

STEP 1



BD03A040

Park machine on a level surface and lower bucket to ground. Put articulation lock in LOCKED position.

STEP 2

Stop engine. Actuate brake pedal several times to discharge brake accumulators. Put key switch in ON position and move loader control lever back and forth at least 30 times to release any pressure from hydraulic circuit. Put key switch in OFF position.

STEP 3

Slowly loosen the filler cap for hydraulic reservoir to release air pressure in hydraulic reservoir.

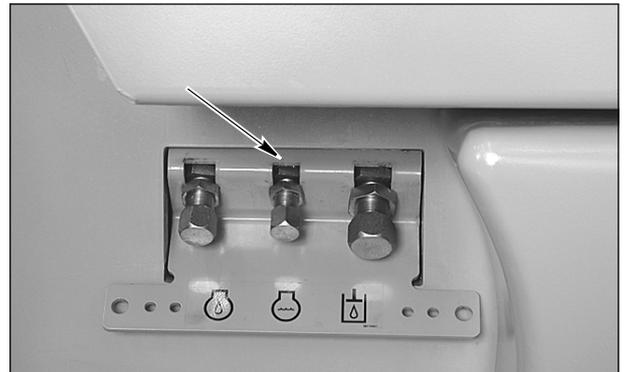
STEP 4



BD07N563-01

The master disconnect is located under the hood on the left rear side of the machine. Raise the hood put master disconnect switch in OFF position. Remove both battery covers and disconnect batteries from the machine.

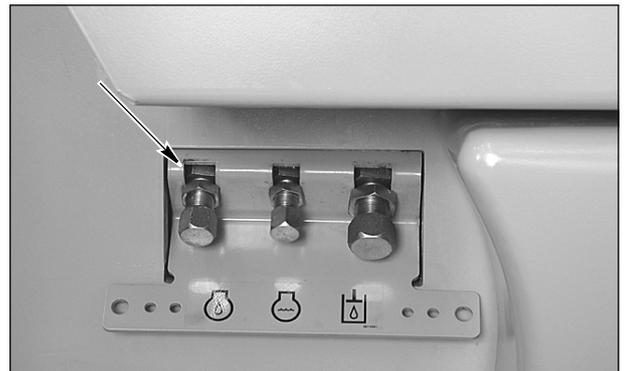
STEP 5



BD02N160

Put a container capable of holding at least 22.7 liter (6.0 gallon) below radiator drain. Remove radiator cap. Remove cap and drain coolant into container. Install cap after coolant has drained. Install radiator cap.

STEP 6



BD02N160

Put a container capable of holding at least 12.3 liter (13 U.S. quarts) below engine oil drain. Remove cap and drain oil into container. Install cap after oil has drained.

NOTE: After draining oil disconnect drain hose from frame for removal with engine.

Click on the image link below for the full version of the service manual

