

721D Loader Service Manual 6-47283

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NOTE: CNH America LLC. 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.

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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.

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

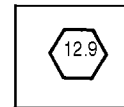
Use the following torques when specifications are not given.

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

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
37 Degree Flare Fitting			
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

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
Straight Threads with O-ring			
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

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	120 to 144	14 to 16	7/16-20	204 to 240	23 to 27
-6	3/8 inch 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 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 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 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 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 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 31.8 mm	1-11/16-12	125 to 140	170 to 190			
-24	1-1/2 inch 38.1 mm	2-12	150 to 180	200 to 254			

Section 1002

1002

FLUIDS AND LUBRICANTS

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CAPACITIES AND LUBRICANTS

Engine Oil

Capacity with Filter Change 14.2 liters (15 U.S. quarts)
 Type of oil Case AKCELA No. 1 engine oil - see engine oil recommendations on page 4

Engine Cooling System

Capacity 25.5 liters (6.75 U.S. Gallons)
 Type of Coolant 50% water and 50% Ethylene Glycol

Fuel Tank

Capacity 246 liters (65 U.S. Gallons)
 Type of Fuel See Diesel fuel specifications on page 5

Hydraulic System

Hydraulic Reservoir Refill Capacity with Filter Change 123 liters (32.5 U.S. Gallons)
 Total System Capacity 193 liters (51 U.S. Gallons)
 Type of Oil Case AKCELA Hy-Tran Ultra®

Transmission

Refill Capacity with Filter Change 25.5 litres (27 U.S. Quarts)
 Total System Capacity 39.7 litres (42 U.S. Quarts)
 Type of Oil Case AKCELA No. 1 15W-40

Axles

Capacity

Front 30.2 litres (32 U.S. Quarts)
 Rear 27.4 litres (29 U.S. Quarts)
 Type of Lubricant Case AKCELA Transaxle Fluid

Brake System

Type of Fluid (Same as Hydraulic System) Case AKCELA 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.*

ENGINE OIL RECOMMENDATIONS

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

If Case AKCELA No. 1 Multi-Viscosity Oil is not available, use only oil meeting API engine oil service category CH-4 (preferred) or CG-4.

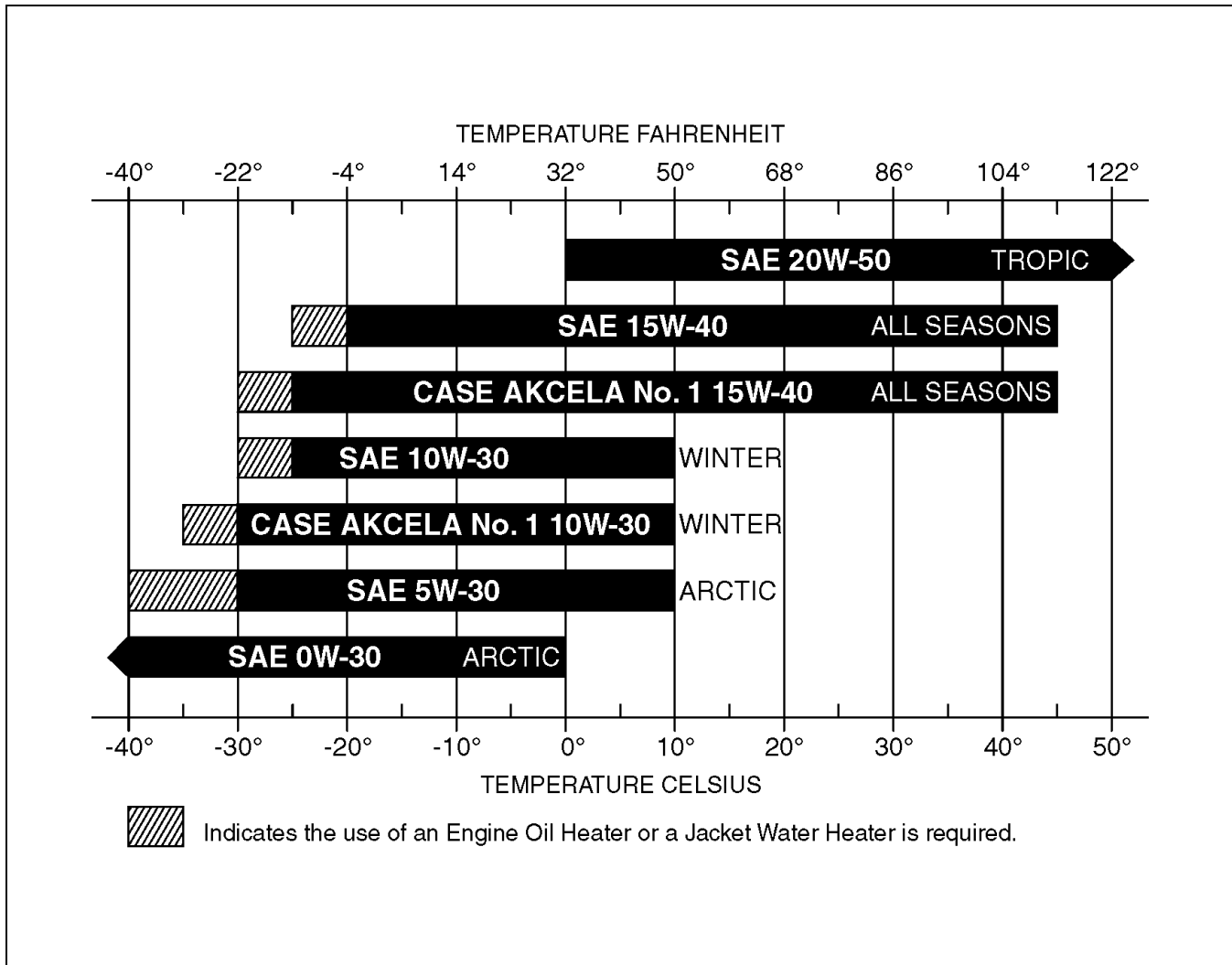


BD03A102



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 AKCELA lubricants.



BC02N250

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 as shown below in, "Specifications for Acceptable No. 2 Diesel Fuel", or "Specification D975-81" of the American Society for Testing and Materials.

Specifications for Acceptable No. 2 Diesel Fuel

API gravity, minimum	34
Flash point, minimum	60°C (140°F)
Cloud point (wax appearance point), maximum	-20°C (-5°F) See Note above
Pour point, maximum	-26°C (-15°F) See Note above
Distillation temperature, 90% point	282 to 338°C (540 to 640°F)
Viscosity, at 38°C (100°F)	
Centistokes	2.0 to 4.3
Cetane number, minimum	43 (45 to 55 for winter or high altitudes)
Water and sediment, by volume, maximum	0.05%

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.

MAINTENANCE SCHEDULE

Model 721D

AS REQUIRED

- SERVICE THE AIR CLEANER IF THE AIR CLEANER WARNING LAMP ILLUMINATES SEE OPERATORS MANUAL
- REPLACE THE TRANSMISSION FILTER
- IF THE TRANSMISSION FILTER RESTRICTION WARNING LAMP ILLUMINATES USE CASE FILTER
- CHECK THE RADIATOR COOLANT LEVEL IF THE WARNING LAMP ILLUMINATES SEE OPERATORS MANUAL
- REPLACE THE HYDRAULIC FILTER IF THE HYDRAULIC FILTER WARNING LAMP ILLUMINATES USE CASE FILTER
- CHECK ALTERNATOR AND AIR CONDITIONING DRIVE BELT SEE OPERATORS MANUAL

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

- CHECK THE ENGINE OIL LEVEL SEE OPERATORS MANUAL

EVERY 50 HOURS OF OPERATION

- CHECK THE TRANSMISSION OIL LEVEL (ENGINE RUNNING AND OIL WARM) SEE OPERATORS MANUAL
- CHECK THE HYDRAULIC RESERVOIR FLUID LEVEL SEE OPERATORS MANUAL
- CHECK THE ENGINE COOLANT SURGE BOTTLE SEE OPERATORS MANUAL
- LUBRICATE THE BUCKET AND BELLCRANK PIVOT POINTS (10 FITTINGS) XT CASE AKCELA MOLYDISULFIDE GREASE
- LUBRICATE THE BELLCRANK AND BUCKET PIVOTS (6 FITTINGS) Z-BAR CASE AKCELA MOLYDISULFIDE GREASE
- LUBRICATE THE FRONT DRIVE SHAFT SUPPORT BEARING CASE AKCELA MOLYDISULFIDE GREASE

EVERY 100 HOURS OF OPERATION

- LUBRICATE THE STEERING CYLINDER PIVOTS - ROD AND CLOSED END (4 FITTINGS) CASE AKCELA MOLYDISULFIDE GREASE
- LUBRICATE THE LOADER LIFT ARM AND CYLINDER PIVOTS (7 FITTINGS) Z-BAR CASE AKCELA MOLYDISULFIDE GREASE

EVERY 250 HOURS OF OPERATION

- CHECK THE ALTERNATOR, AC BELT SEE OPERATORS MANUAL
- CHECK THE TIRE CONDITION AND AIR PRESSURE SEE OPERATORS MANUAL
- CLEAN THE CAB AIR FILTERS (IF EQUIPPED) SEE OPERATORS MANUAL

EVERY 500 HOURS OF OPERATION

- CHANGE THE ENGINE OIL AND REPLACE THE ENGINE OIL FILTER SEE OPERATORS MANUAL
- REPLACE THE FUEL FILTER SEE OPERATORS MANUAL
- CHECK THE BATTERY FLUID LEVEL SEE OPERATORS MANUAL
- DRAIN WATER AND SEDIMENT FROM THE FUEL TANK SEE OPERATORS MANUAL
- CHECK THE AXLE OIL LEVEL FRONT AND REAR SEE OPERATORS MANUAL
- CHECK ROPS AND SEAT BELT MOUNTING BOLTS SEE OPERATORS MANUAL
- ENGINE CRANCKCASE OIL BREATHER SEE ENGINE SERVICE MANUAL

EVERY 1000 HOURS OF OPERATION

- REPLACE THE HYDRAULIC FILTER USE CASE FILTER
- REPLACE WATER SEPARATOR USE CASE FILTER
- REPLACE THE TRANSMISSION OIL FILTER USE CASE FILTER
- CHANGE THE TRANSMISSION OIL SEE OPERATORS MANUAL
- CLEAN THE TRANSMISSION BREATHER CLEAN WITH SOLVENT
- LUBRICATE THE UPPER AND LOWER CHASSIS PIVOTS (2 FITTINGS) CASE AKCELA MOLYDISULFIDE GREASE
- CHANGE THE FRONT/REAR AXLE OIL SEE OPERATORS MANUAL
- LUBRICATE CENTER DRIVE SHAFT SLIP JOINT CASE AKCELA MOLYDISULFIDE GREASE

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

- CHANGE THE HYDRAULIC OIL SEE OPERATORS MANUAL
- DRAIN, FLUSH AND REFILL THE ENGINE COOLING SYSTEM ETHYLENE GLYCOL AND WATER
- REPLACE THE AIR CLEANER ELEMENTS USE CASE FILTERS
- CHECK THE ENGINE VALVE CLEARANCES SEE ENGINE SERVICE MANUAL
- CHECK TURBOCHARGER MOUNTING BOLTS SEE ENGINE SERVICE MANUAL

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 Systemgard 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.

Section 1003

1003

METRIC CONVERSION CHART

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CONVERSION FACTORS Metric to U.S.

	<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
Area:	sq. meter hectare	10.763 91 2.471 05	square foot acre
Force:	newton newton	3.596 942 0.224 809	ounce force pound force
Length:	millimeter meter kilometer	0.039 370 3.280 840 0.621 371	inch foot mile
Mass:	kilogram	2.204 622	pound
Mass/Area:	kilogram/hectare	0.000 466	ton/acre
Mass/Energy:	gr/kW/hr.	0.001 644	lbs/hp/hr.
Mass/Volume:	kg/cubic meter	1.685 555	lb/cubic yd.
Power:	kilowatt	1.341 02	horsepower
Pressure:	kilopascal bar	0.145 038 14.50385	lb/sq. inch lb/sq. inch
Temperature:	degree C	1.8 x C +32	degree F
Torque:	newton meter newton meter	8.850 748 0.737 562	lb/inch lb/foot
Velocity:	kilometer/hr.	0.621 371	miles/hr.
Volume:	cubic centimeter cubic meter cubic meter milliliter litre litre litre litre	0.061 024 35.314 66 1.307 950 0.033 814 1.056 814 0.879 877 0.264 172 0.219 969	cubic inch cubic foot cubic yd. ounce (US fluid) quart (US liquid) quart (Imperial) gallon (US liquid) gallon (Imperial)
Volume/Time:	litre/min. litre/min.	0.264 172 0.219 969	gallon/min. (US liquid) gallon/min. (Imperial)

U.S. to Metric

	<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
Area:	square foot acre	0.092 903 0.404 686	square meter hectare
Force:	ounce force pound force	0.278 014 4.448 222	newton newton
Length:	inch foot mile	25.4 * 0.304 8 * 1.609 344 *	millimeter meter kilometer
Mass:	pound ounce	0.453 592 28.35	kilogram gram
Mass/Area:	ton/acre	2241 702	kilogram/hectare
Mass/Energy:	lb/hp/hr	608.277 4	gr/kW/hr
Mass/Volume:	lb/cubic yd.	0.593 276	kg/cubic meter
Power:	horsepower	0.745 700	kilowatt
Pressure:	lbs/sq. in. lbs/sq. in. lbs/sq. in.	6.894 757 0.069 0.070 303	kilopascal bar kg/sq. cm
Temperature:	degree F	1.8 F - 32	degree C
Torque:	pound/inch pound/foot	0.112 985 1.355 818	newton meter newton meter
Velocity:	miles/hr.	1.609 344 *	kilometer/hr.
Volume:	cubic inch cubic foot cubic yard ounce (US fluid) quart (US liquid) quart (Imperial) gallon (US) gallons (Imperial)	16.387 06 0.028 317 0.764.555 29.573 53 0.946 353 1.136 523 3.785 412 4.546 092	cubic centimeter cubic meter cubic meter milliliter litre litre litre litre
Volume/Time:	gallon/min.	3.785 412	litre/min.

* = exact

SECTION INDEX

ENGINES

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FOR ENGINE REPAIR, SEE THE ENGINE SERVICE MANUAL

Section 2000

ENGINE AND RADIATOR REMOVAL AND INSTALLATION

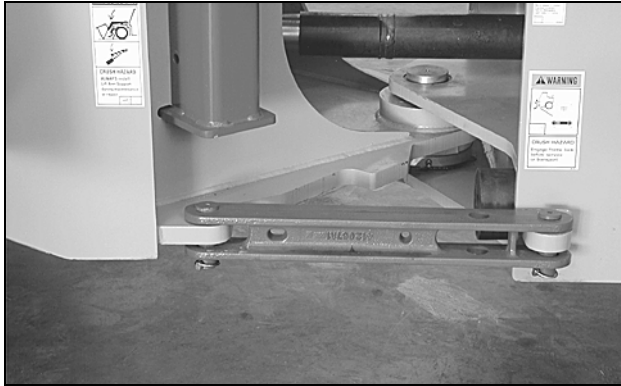
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ENGINE

Removal

STEP 1



BD03A040

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

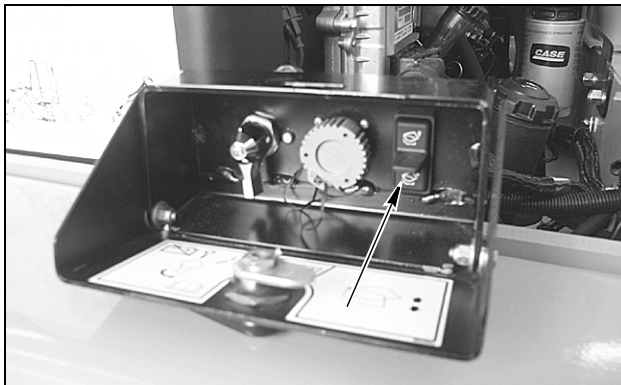
STEP 2

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.

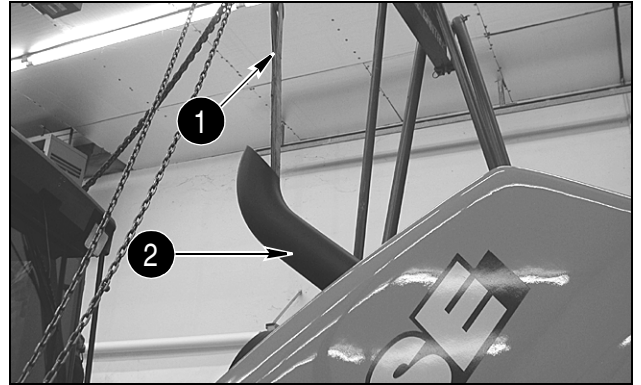
STEP 4



BD03A222

Raise the hood with the hood lift motor. Put master disconnect switch in OFF position. Remove both battery covers and disconnect batteries from the machine.

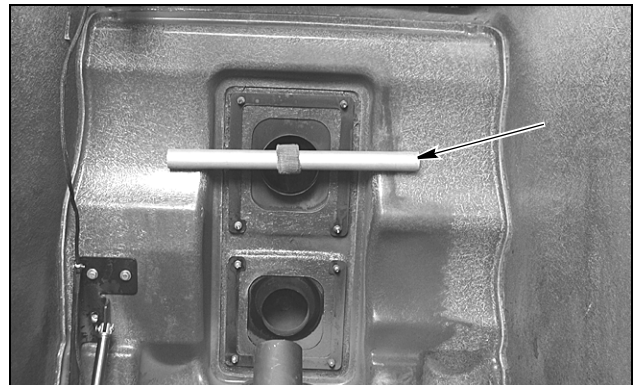
STEP 5



BD03A231

Double up a nylon lifting strap (1) and slide through the exhaust stack (2) on the hood.

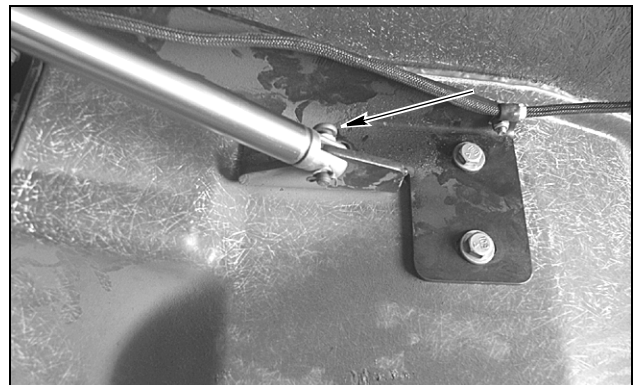
STEP 6



BD03A230

Place a solid steel bar through the strap, raise the hood and release tension on the lifting motor.

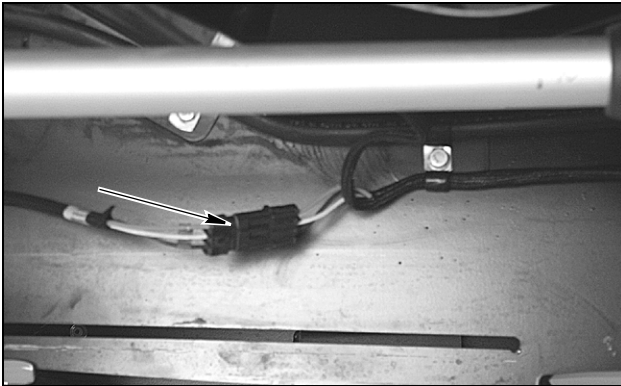
STEP 7



BD03A228

Remove the pin from the top of the lifting motor.

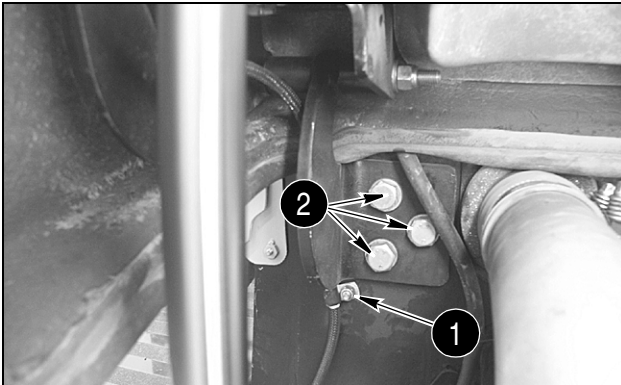
STEP 8



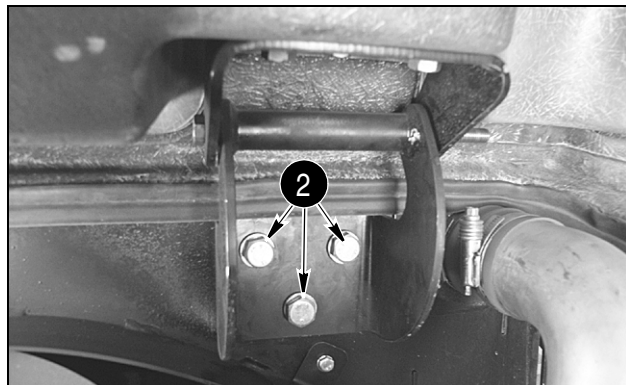
BD03A223

Tag and disconnect hood wiring harness connector from rear chassis wiring harness connector.

STEP 9



BD03A227



BD03A226

Remove mount bolt (1) and backup alarm wiring harness clamp from cooler housing. Have another person balance the hood and remove the hood hinge mounting bolts (2) from the cooler frame.

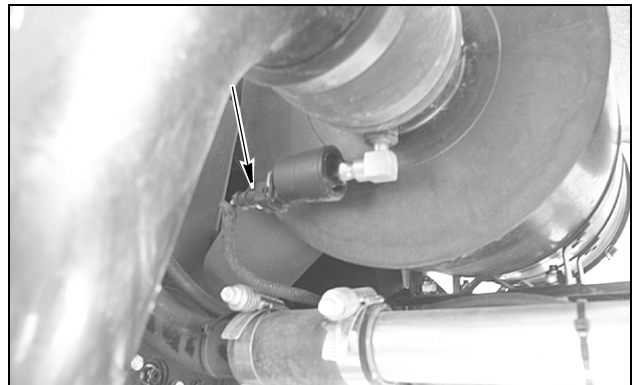
STEP 10



BD03A232

Carefully raise and remove hood from loader. Lower hood onto suitable platform and disconnect lifting equipment.

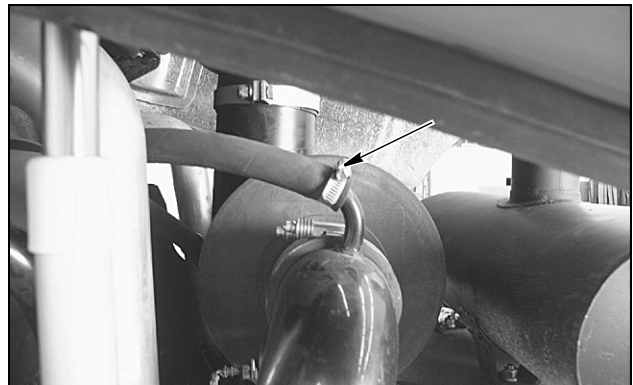
STEP 11



BD03A224

Tag and disconnect engine wiring harness connector from air filter restriction switch.

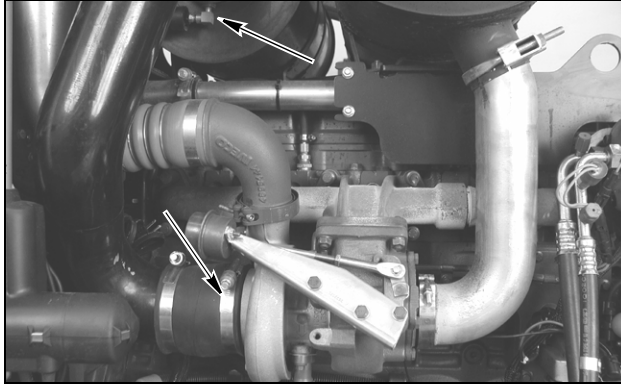
STEP 12



BD03A225

Loosen clamp on air cleaner intake hose and remove the crankcase ventilation hose.

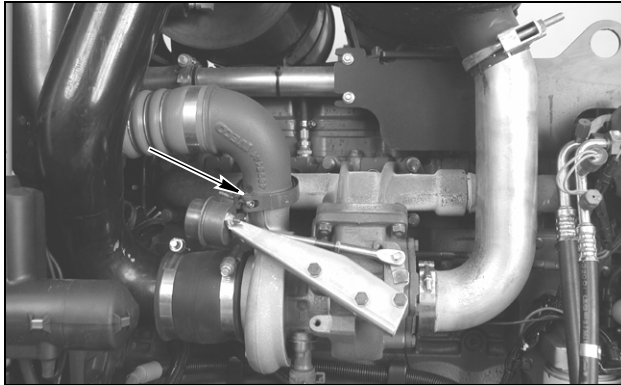
STEP 13



BD03A137

Loosen clamps on turbocharger and air cleaner, remove the intake hose.

STEP 14



BD03A137

Loosen the clamp on the turbocharger for the after cooler inlet hose.

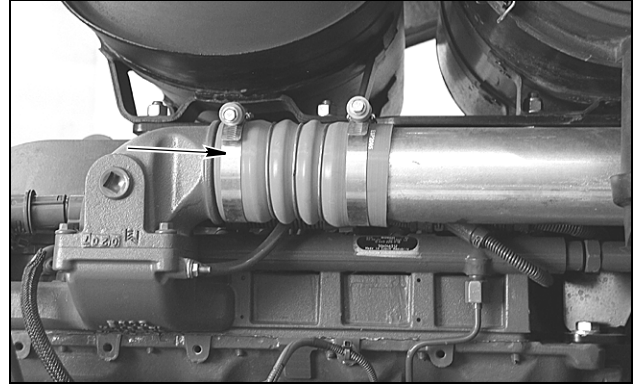
STEP 15



BD03A115

Loosen the clamp on the after cooler and remove the after cooler inlet hose from the machine.

STEP 16



BD03A119

Loosen the clamp on the intake manifold for the after cooler output hose.

STEP 17



BD03A118

Loosen the clamp on the after cooler and remove the after cooler outlet hose from the machine.

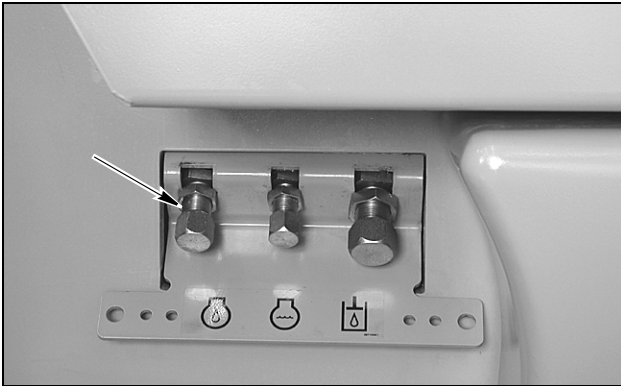
STEP 18



BD02N160

Put a 25.5 liter (6.75 gallon) container below radiator drain. Remove radiator cap. Remove cap and drain coolant into container. Install cap after coolant has drained. Install radiator cap.

STEP 19

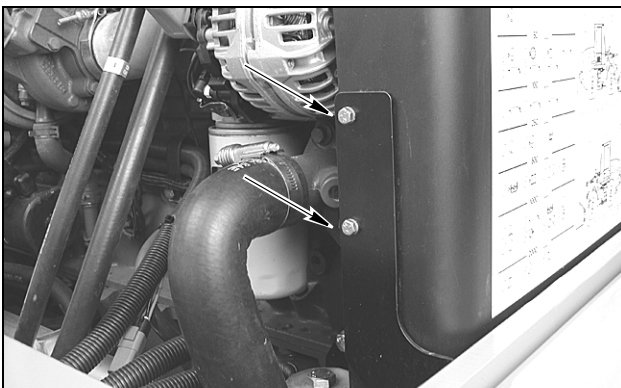


BD02N160

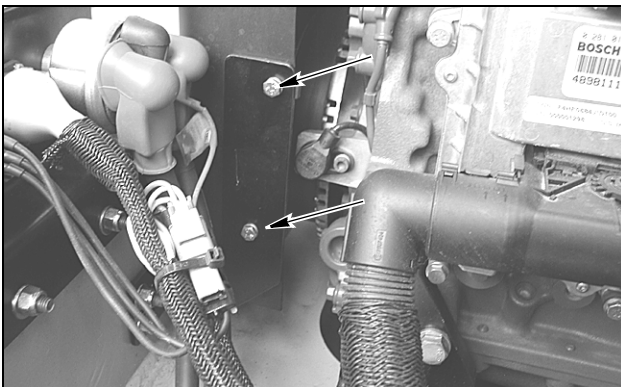
Put a 14.2 liter (15 U.S. quarts) container below engine oil drain. Remove cap and drain oil into container. Install cap after oil has drained.

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

STEP 20



BD03A128

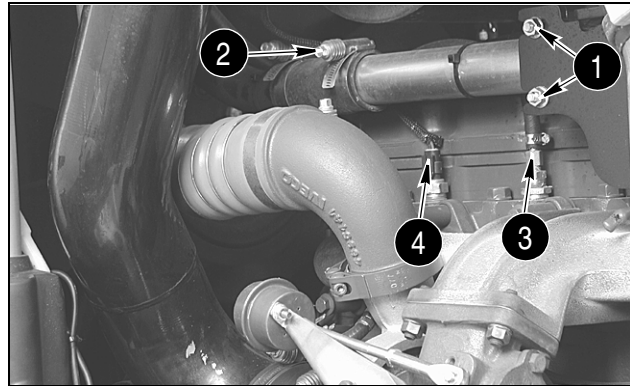


BD03A129

Remove the four mounting bolts from the belt cover, remove the cover.

NOTE: After removing the belt cover remove the cover mounting brackets from the machine frame.

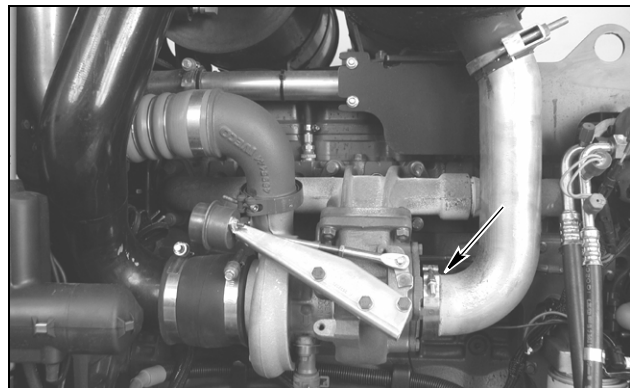
STEP 21



BD03A147

Loosen and remove the two nuts (1) and washers from the upper coolant pipe support clamp, remove the clamp. Loosen the coolant pipe clamp (2). Disconnect the engine coolant vent line (3). Tag and disconnect the coolant temperature sending unit (4).

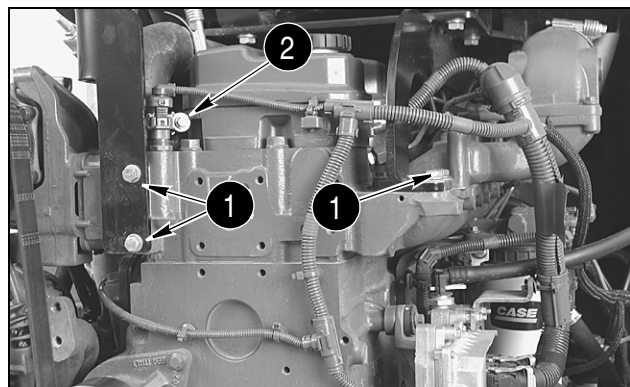
STEP 22



BD03A137

Loosen the exhaust clamp from the turbocharger.

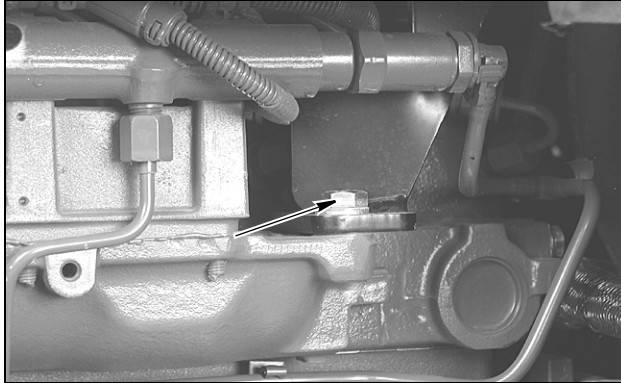
STEP 23



BD03A140

Loosen the upper coolant line hose clamp (2), remove the hose and pipe from the machine. Attach suitable lifting equipment to the muffler and air cleaner bracket. Remove the four front muffler and air cleaner bracket mounting bolts (1).

STEP 24

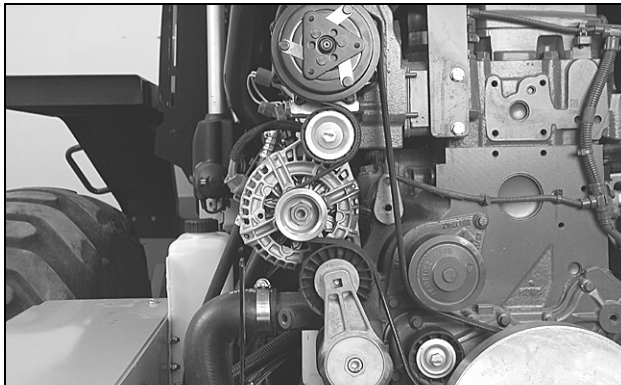


BD03A145

Remove the rear bracket mounting bolt. Remove two brace mounting bolts from the bell housing. Remove the bracket, muffler, and air cleaner from the machine.

NOTE: Make sure fuel lines and electrical wiring do not become entangled in the bracket during removal.

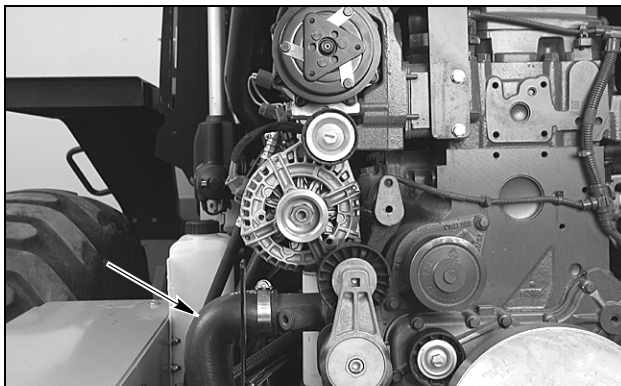
STEP 25



BD03A134

Remove the drive belt from the engine.

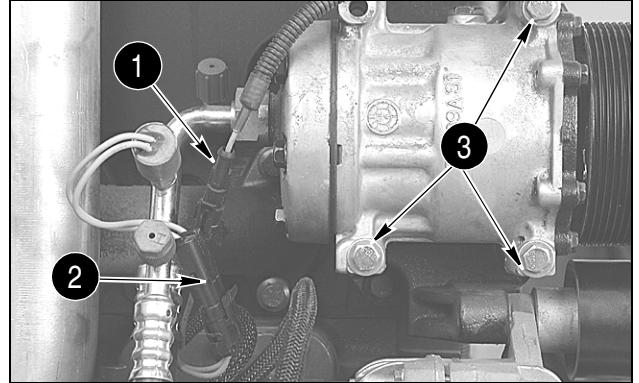
STEP 26



BD03A132

Loosen clamps and remove lower cooler hose from the engine.

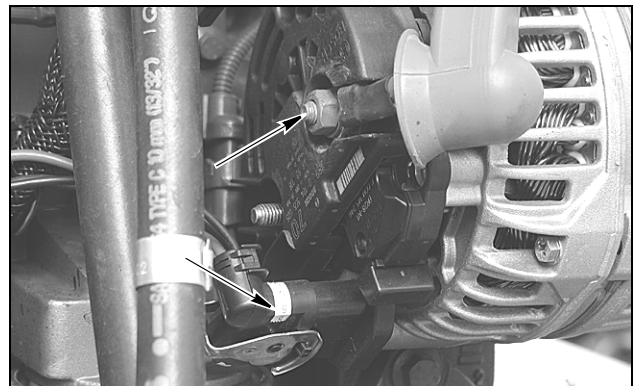
STEP 27



BD03A131

If loader is equipped with air conditioning, identify, tag, and disconnect the engine wiring harness connectors from air compressor clutch connector (1) and high pressure switch connector (2). Remove the three mounting bolts (3) for the compressor and set the compressor on the left battery cover.

STEP 28



BD03A130

Tag and disconnect the wiring from the alternator.

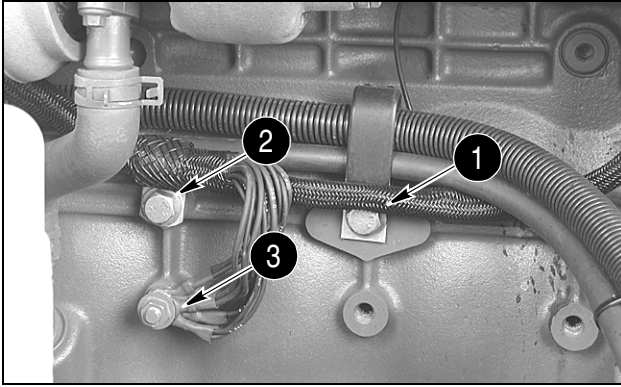
STEP 29



BD03A136

Remove bolt securing wiring harness clamp to engine.

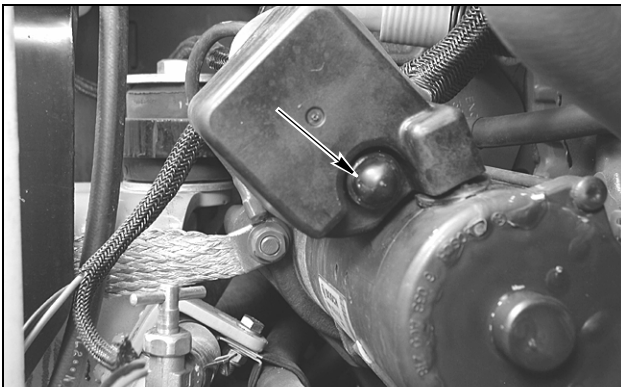
STEP 30



BD03A135

Remove bolts securing wiring harness (2), starter battery cables (1), clamps to the engine. Remove ground wires (3) from the engine.

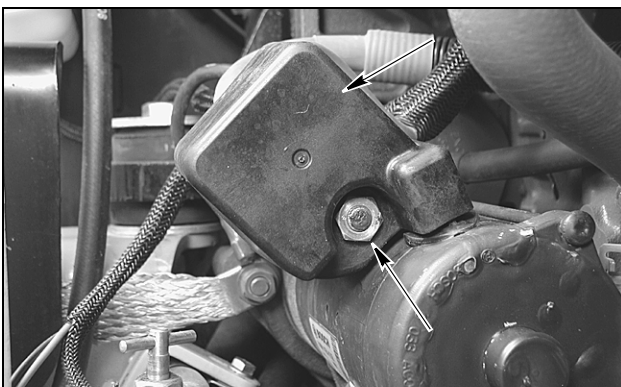
STEP 31



BD03A127

Remove the rubber cap from the starter solenoid cover.

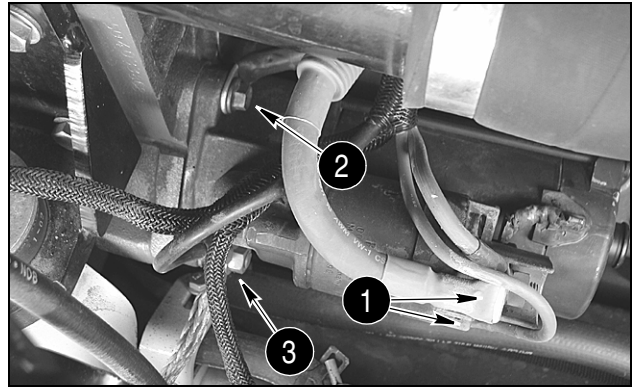
STEP 32



BD03A126

Remove the starter solenoid cover mounting nut, remove the cover.

STEP 33

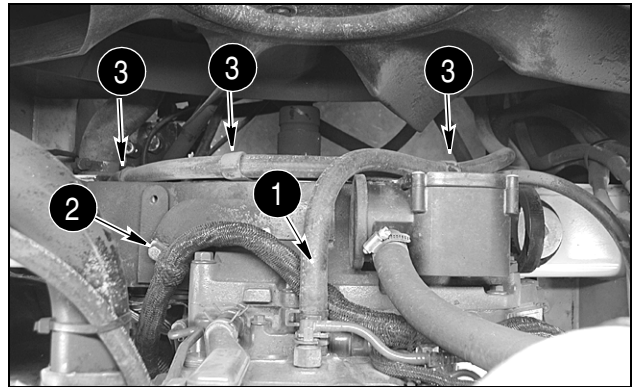


BD03A123

Tag and remove the wires from the starter solenoid (1), remove the ground cable (2), and ground strap (3) from the starter.

NOTE: Move the starter cables to the rear of the machine and away from the engine, move the wiring harness to the bell housing of the engine.

STEP 34

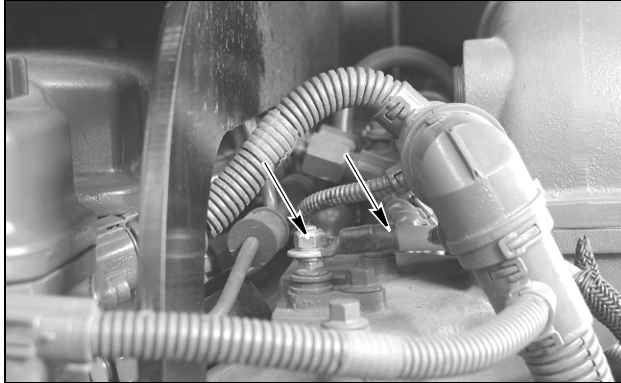


BD03A215

Remove the heater hose (1) from the rear of the engine, remove the mount bolt and wiring harness clamp (2), remove the clamp bolts and clamps (3) from the bell housing.

NOTE: Move the wiring harness to the right side of the engine.

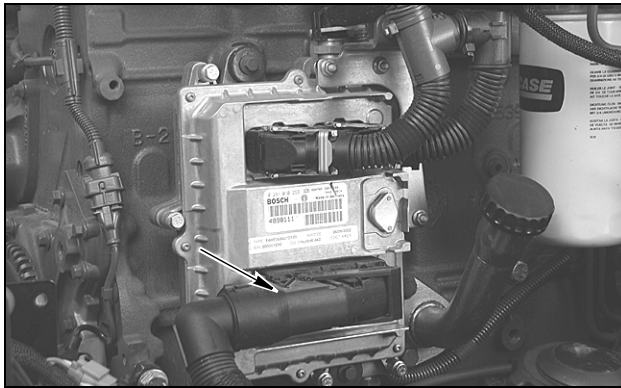
STEP 35



BD03A144

Tag and remove the grid heater cable.

STEP 36

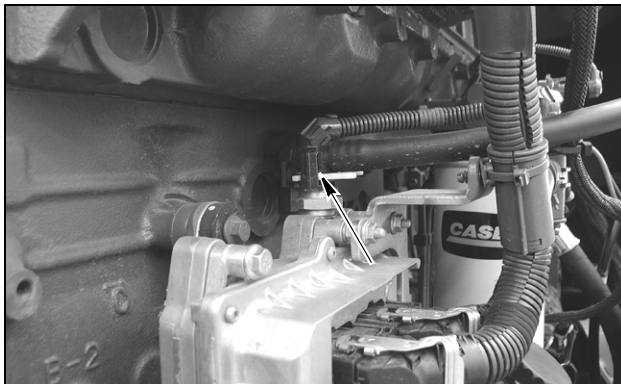


BD03A142

Disconnect the wiring harness from the EDC 7 controller.

NOTE: *Lifting up on the lever will release the connector from the controller.*

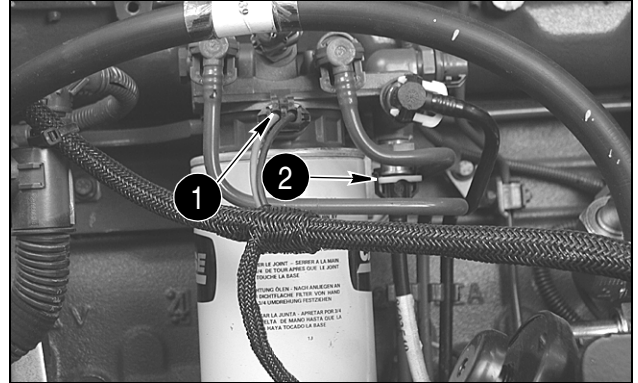
STEP 37



BD03A182

Remove the fuel line from the top of the EDC 7 controller, plug the line and cap the fitting.

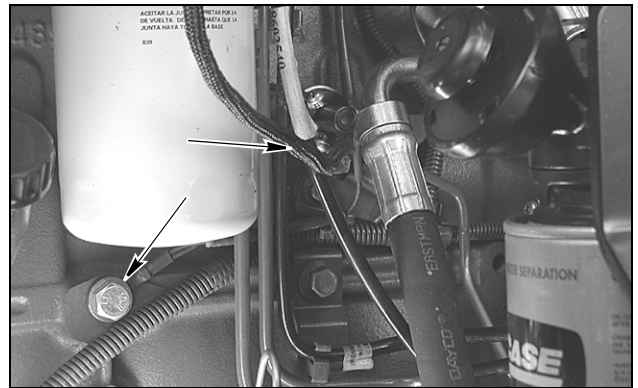
STEP 38



BD03A148

Tag and disconnect the fuel filter heater wires (1), disconnect the fuel line (2) from the fuel filter head, plug the line and cap the fitting.

STEP 39

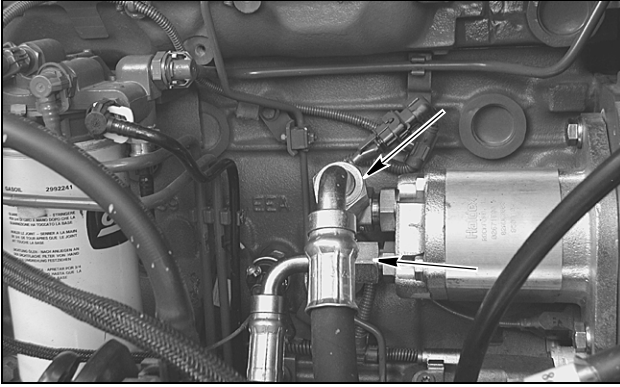


BD03A150

Tag and disconnect the wiring harness from the engine oil pressure switch. Remove the ground wires from the engine.

NOTE: *Move the wiring harness toward the front of the machine and away from the engine.*

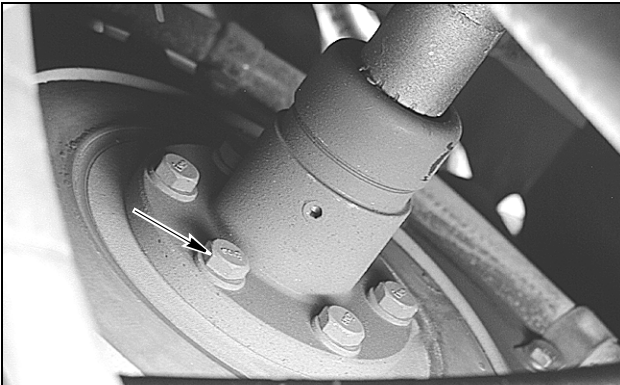
STEP 40



BD03A149

Connect and turn on vacuum pump to hydraulic reservoir. Tag and remove the hydraulic lines from the brake system pump, plug the lines and cap the fittings.

STEP 41



BD03A172

Remove the drive shaft bolts from the flywheel. Move the drive shaft clear of the flywheel.

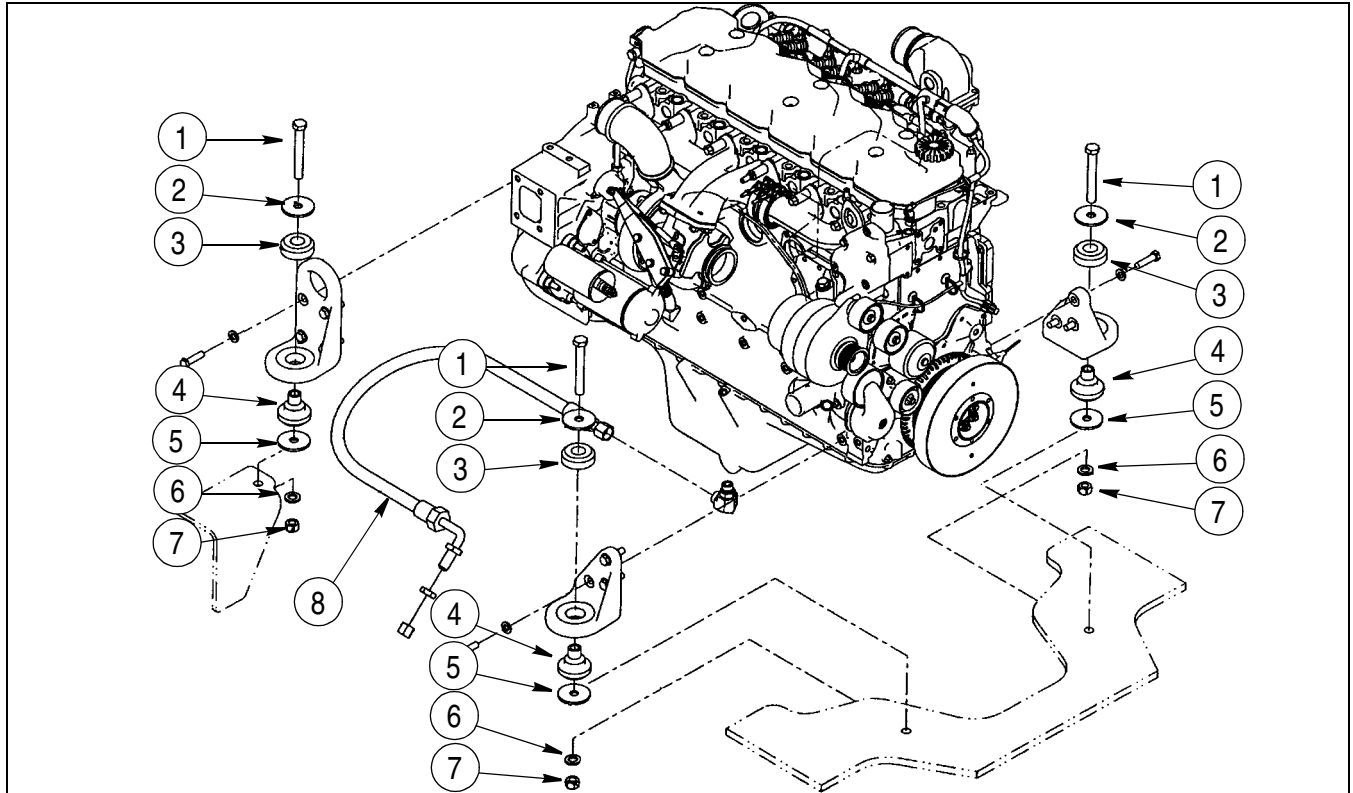
STEP 42

Connect suitable lifting equipment to engine lifting brackets. Take up all slack in lifting equipment. Remove the engine mounting bolts and lift the engine enough to gain access to the drain hose.

STEP 43

Slowly raise engine from rear chassis. Be sure all harness connections and hoses have been disconnected and are clear of the engine. Remove engine from machine.

Installation



BS03B035

1. ENGINE MOUNT BOLT
2. WASHER

3. INSOLATOR UPPER
4. INSOLATOR LOWER

5. WASHER
6. WASHER

7. NUT
8. REMOTE OIL DRAIN HOSE

STEP 44

If engine rubber isolators require replacement, remove and discard isolators (3 and 4). Install new rubber isolator (4), then rubber isolator (3).

STEP 45

Slowly raise engine and move into position over rear chassis. Be sure all harness connections and hoses are out of the way then lower engine. Put washer (5) between front rubber isolator (4) and chassis. Install washer (2), bolt (1), washer (6), and nut (7) in engine isolators. Lower engine into position.

STEP 46

Tighten engine mounting bolts to a torque of 244 to 298 Nm (180 to 220 lb-ft).

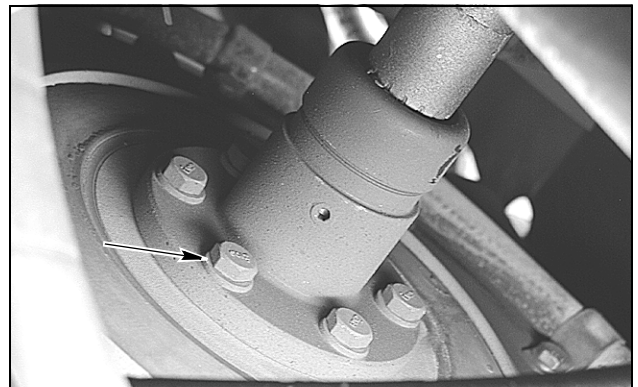
STEP 47

Disconnect lifting equipment from engine lifting brackets.

STEP 48

Connect engine oil drain hose to frame bracket.

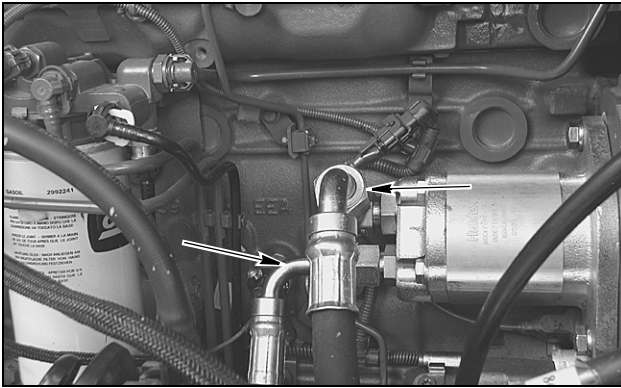
STEP 49



BD03A172

At front of engine, position drive shaft on engine coupling. Install six bolts to secure drive shaft to engine coupling. Tighten the six bolts to a torque of 53 to 62 Nm (39 to 46 lb-ft).

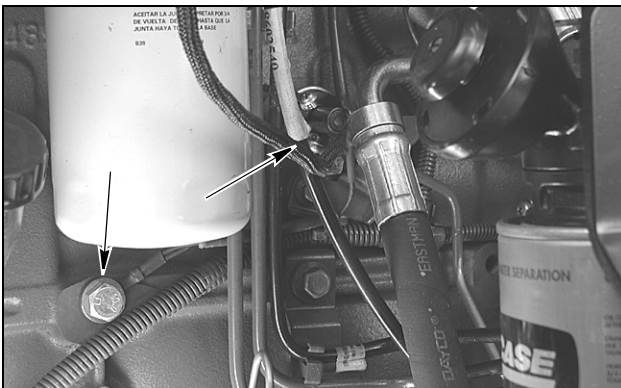
STEP 50



BD03A149

Connect and turn on vacuum pump to the hydraulic reservoir. Remove caps from fittings and plugs from hoses. Connect hoses to brake pump following tags installed during removal. Remove and discard tags. Turn off and disconnect vacuum pump from hydraulic reservoir.

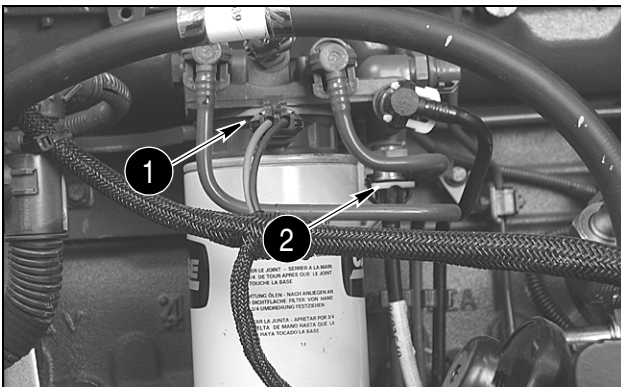
STEP 51



BD03A150

Connect wiring harness to oil pressure switch, connect grounding wire to engine block. Remove and discard tag.

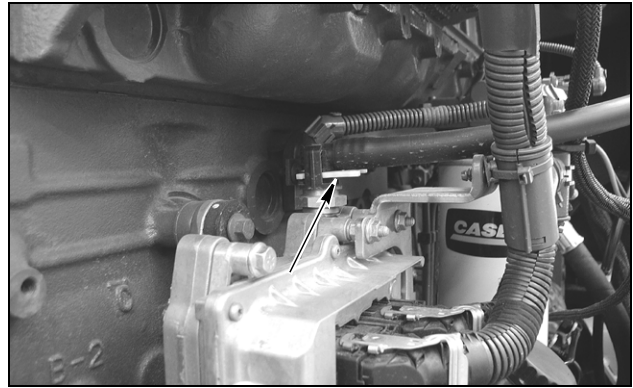
STEP 52



BD03A148

Remove cap from fitting and plug from the hose, connect fuel line (2). Connect fuel filter heater wires (1). Remove and discard tag.

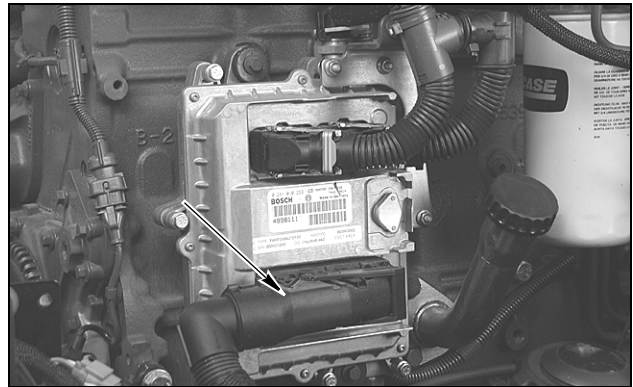
STEP 53



BD03A182

Remove cap from fitting and plug from the hose, connect fuel line to EDC 7.

STEP 54



BD03A142

Connect wiring harness to EDC 7 controller.

NOTE: Start the connector on the EDC 7 with lever straight out from EDC 7. Use lever to pull connector into position.

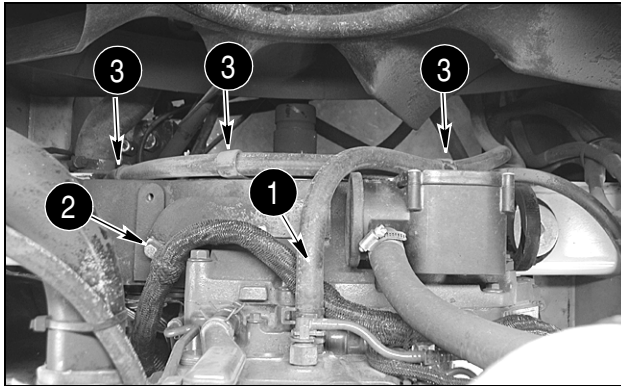
STEP 55



BD03A144

Connect grid heater cable to grid heater. Remove and discard tag.

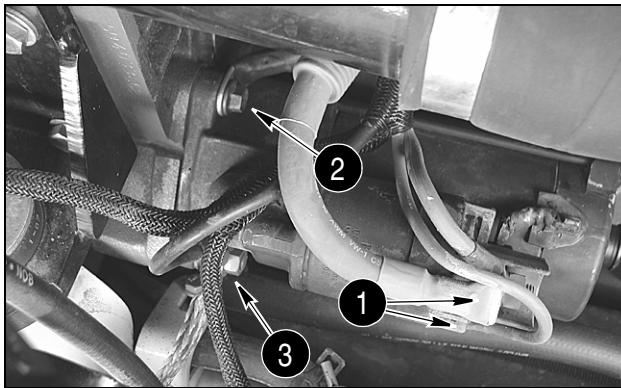
STEP 56



BD03A215

Install the heater hose (1) to the rear of the engine, mount the wiring harness clamp (2), install the clamps (3) to the bell housing.

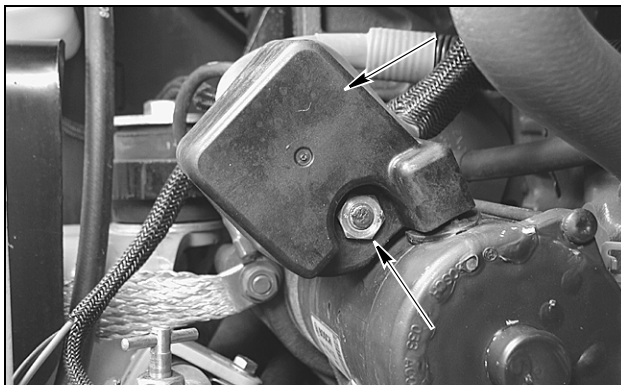
STEP 57



BD03A123

Install the wires to the starter solenoid (1), install the ground cable (2), and ground strap (3) to the starter. Remove and discard tags.

STEP 58



BD03A126

Install the starter solenoid cover and secure with mounting nut.

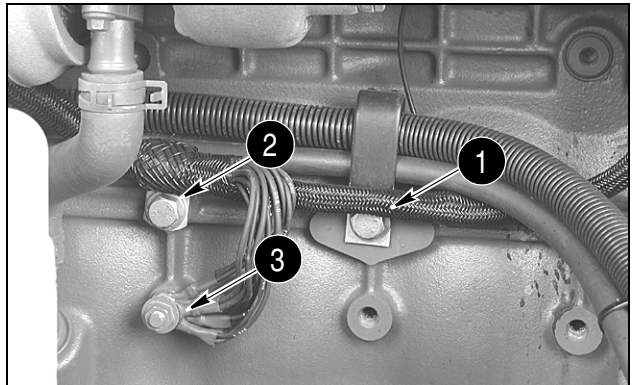
STEP 59



BD03A127

Install the rubber cap on the starter solenoid cover nut.

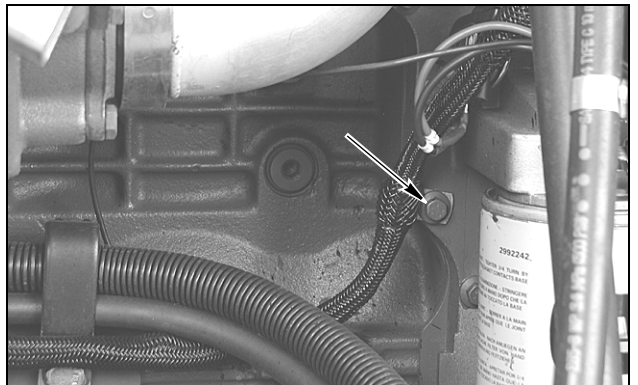
STEP 60



BD03A135

Install bolts securing wiring harness (2), starter battery cables (1), clamps to the engine. Install ground wires (3) to the engine.

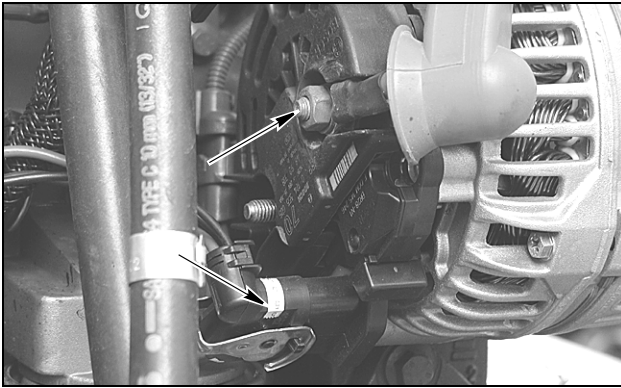
STEP 61



BD03A136

Install bolt securing wiring harness clamp to engine.

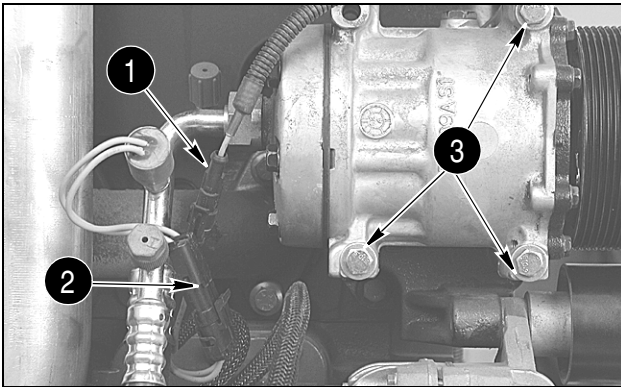
STEP 62



BD03A130

Connect the wiring to the alternator. Remove and discard tags.

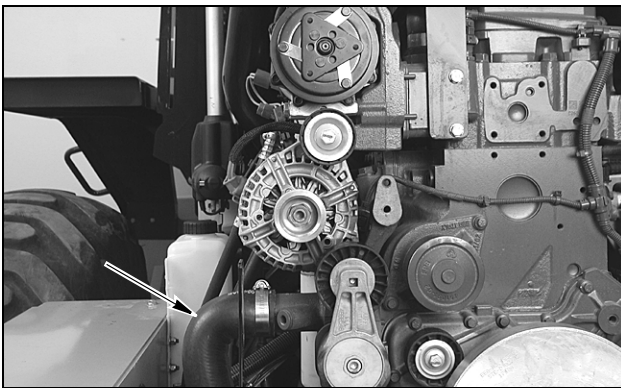
STEP 63



BD03A131

If loader is equipped with air conditioning, mount the compressor using the three mounting bolts (3), connect the engine wiring harness connectors to air compressor clutch connector (1) and high pressure switch connector (2). Remove and discard tags.

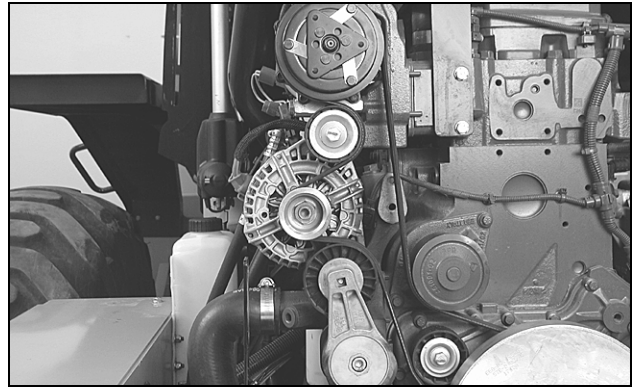
STEP 64



BD03A132

Install lower cooler hose to the engine and tighten the clamps to a torque of 10.1 to 11.3 Nm (90 to 100 lb-inch).

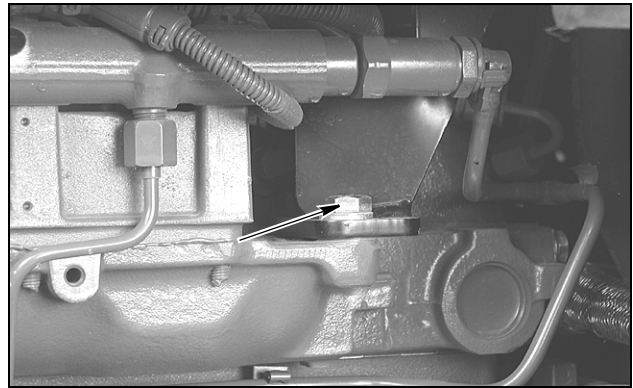
STEP 65



BD03A134

Install the drive belt.

STEP 66

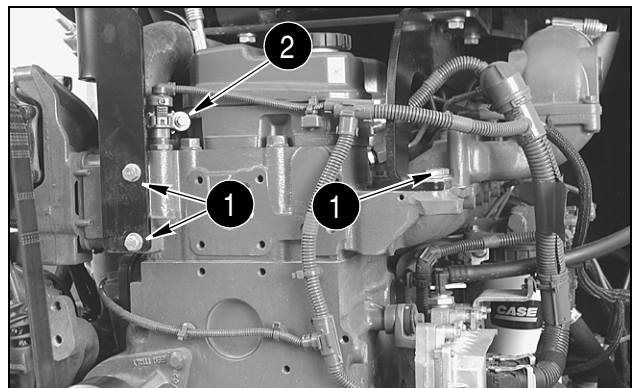


BD03A145

Place the bracket, muffler, and air cleaner over the engine. Install the rear bracket mounting bolt. Install two brace mounting bolts in the bell housing.

NOTE: Make sure fuel lines and electrical wiring do not become entangled in the bracket during installation.

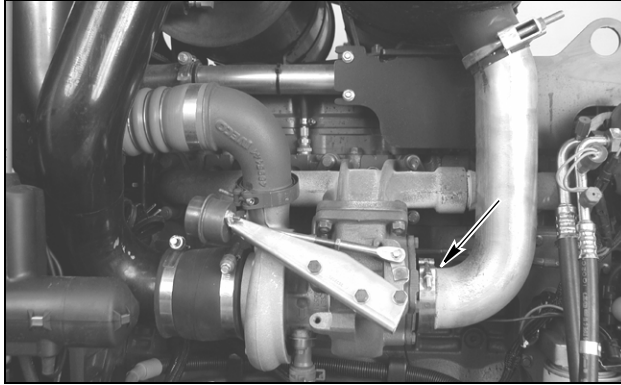
STEP 67



BD03A140

Install the four front muffler and air cleaner bracket mounting bolts (1). Install the upper coolant line and hose. Tighten the upper coolant line hose clamp (2) to a torque of 10.1 to 11.3 Nm (90 to 100 lb-inch).

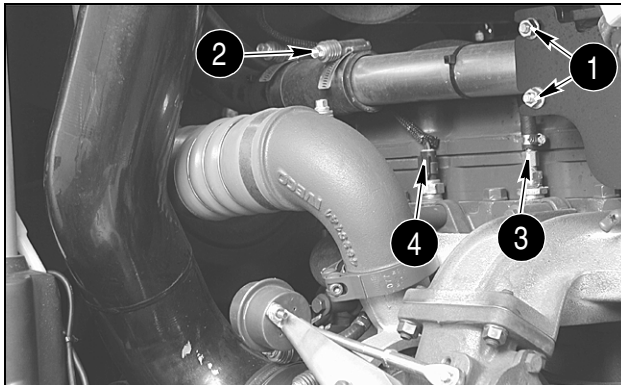
STEP 68



BD03A137

Install and tighten the exhaust clamp on the turbocharger.

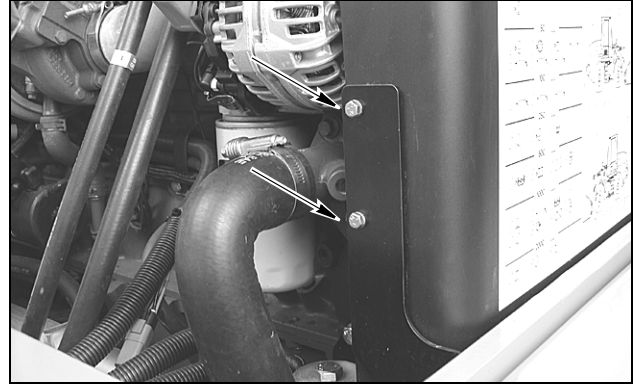
STEP 69



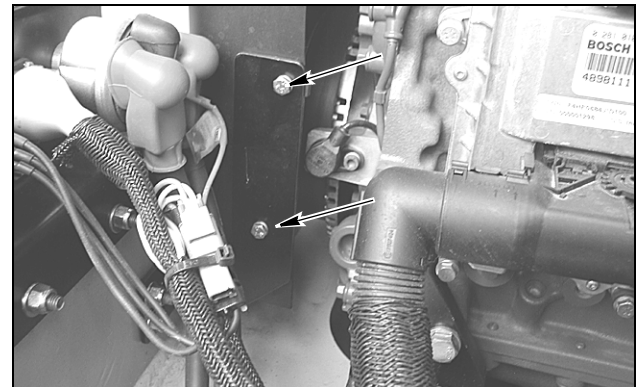
BD03A147

Install the coolant pipe support clamp, install washers two nuts (1) and tighten. Tighten the coolant pipe clamp (2) to a torque of 10.1 to 11.3 Nm (90 to 100 lb-inch). Connect the engine coolant vent line (3). Connect the coolant temperature sending unit (4). Remove and discard tag.

STEP 70



BD03A128



BD03A129

Install the cover mounting brackets to the machine frame. Install the belt cover, install the four mounting bolts for the belt cover.

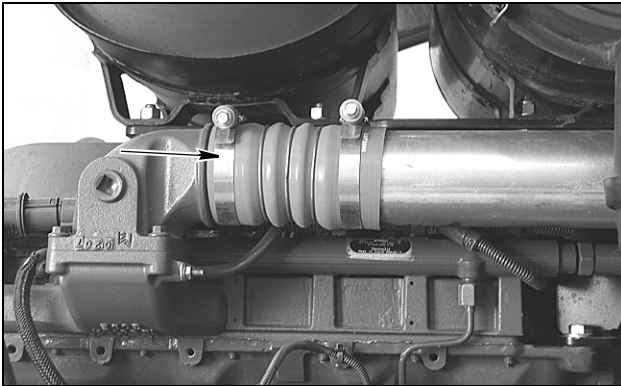
STEP 71



BD03A118

Place the after cooler outlet hose on the machine. Tighten the clamp on the after cooler.

STEP 72



BD03A119

Tighten the clamp on the intake manifold for the after cooler output hose.

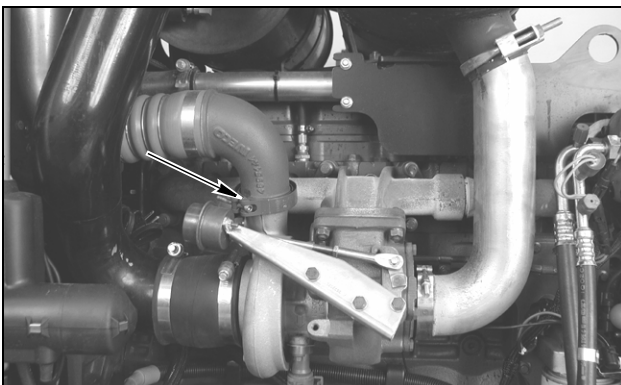
STEP 73



BD03A115

Place the after cooler inlet hose on the machine. Tighten the clamp on the after cooler.

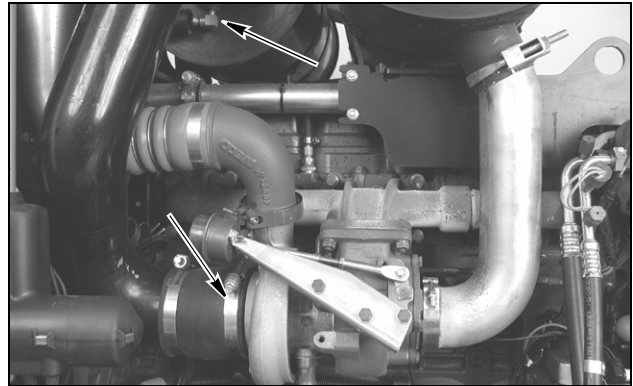
STEP 74



BD03A137

Tighten the clamp on the turbocharger for the after cooler inlet hose.

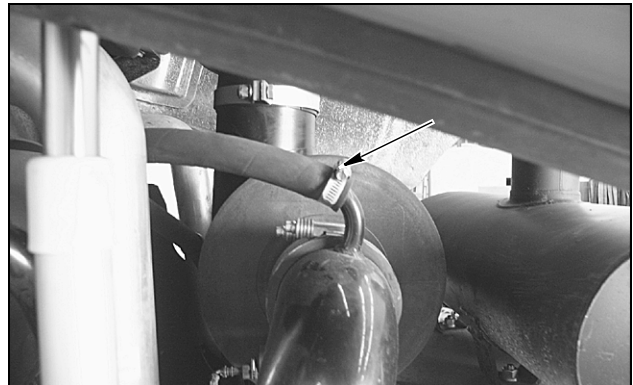
STEP 75



BD03A137

Install the intake hose and tighten the clamps on turbocharger and air cleaner.

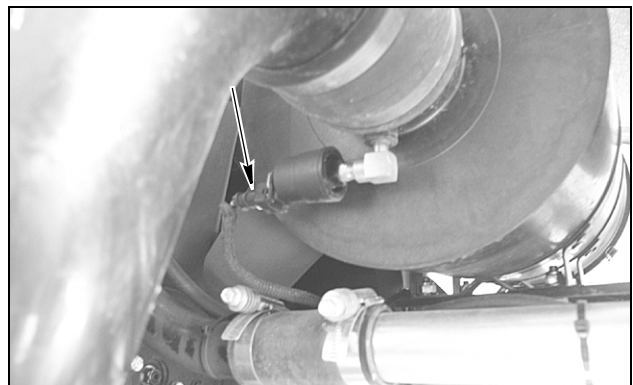
STEP 76



BD03A225

Install the crankcase ventilation hose and tighten the clamp on air cleaner intake hose.

STEP 77



BD03A224

Connect engine wiring harness connector to air filter restriction switch. Remove and discard tag.

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