586G 588G SERIES 3 TIER 3 FORKLIFT
Repair Manual
Bur 87728464

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CNH America LLC.
700 State Street
Racine, WI 53404 U.S.A.

Issued April, 2008

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NOTE: CNH 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.

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GENERAL

CNH America LLC.
700 State Street
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Bur 5-12830

Issued April, 2008

Section 1001

GENERAL TORQUE SPECIFICATIONS

CASE, LLC.
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Bur 8-71603

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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.

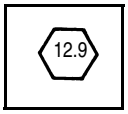
Grade 8.8 Bolts, Nuts, and Studs

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

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

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

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

FLUIDS AND LUBRICANTS

CNH America LLC.
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Bur 5-12850

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CAPACITIES AND LUBRICANTS

Engine Crankcase
- Capacity with filter change ..... 13.6 liters (14.4 U.S. quarts)
- Specifications ..... Case AKCELA No. 1 15W-40 API CH-4

Fuel Tank
- Capacity ..... 117 liters (31 U.S. gallons)
- Specifications ..... See page 5

Cooling System
- Capacity ..... 16.1 liters (17 U.S. quarts)
- Specifications ..... 50% water and 50% ethylene glycol

Hydraulic System
- Total System ..... 68.1 liters (72 U.S. quarts)
- Capacity with filter change ..... 54.9 liters (58 U.S. quarts)
- Capacity without filter change ..... 53.0 liters (56 U.S. quarts)
- Specifications ..... Case AKCELA Hy-Tran® Ultra

Transmission
- 2 Wheel Drive
  - Total system capacity ..... 18.5 liters (19.5 U.S. quarts)
  - Refill capacity with or without filter change ..... 11.9 liters (12.6 U.S. quarts)
  - Type of Fluid ..... Case AKCELA Hy-Tran® Ultra
- 4 Wheel Drive
  - Total system capacity ..... 20.8 liters (22 U.S. quarts)
  - Refill capacity with or without filter change ..... 14.4 liters (15.2 U.S. quarts)
  - Type of Fluid ..... Case AKCELA Hy-Tran® Ultra

Front Drive Axle
- Capacity - Differential ..... 14.2 liters (15 U.S. quarts)
- Capacity - Each Planetary Hub ..... 1.5 liters (1.6 U.S. quarts)
- Type of Fluid ..... Case AKCELA Hy-Tran® Ultra
- Center Bowl Oil Additive ..... Case AKCELA Axle Oil Additive

Rear Steering Axle
- 4 Wheel Drive
  - Capacity - Differential ..... 5.5 liters (5.8 U.S. quarts)
  - Capacity - Each Planetary Hub ..... 0.7 liters (0.74 U.S. quarts)

NOTE: *Check the part number on the axle serial number plate to determine correct oil type for the front axle.*
- Axle P/N 87417387 Type of Fluid ..... Case AKCELA Hy-Tran® Ultra
- Axle P/N 87395365 Type of Fluid ..... Case Transaxle Fluid (MS1317) MAT3510

Brake Master Cylinder ..... (Brake fluid supplied by hydraulic reservoir)

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 Engine Oil is not available, Case AKCELA No. 1 Single Grade Engine Oil can be used.

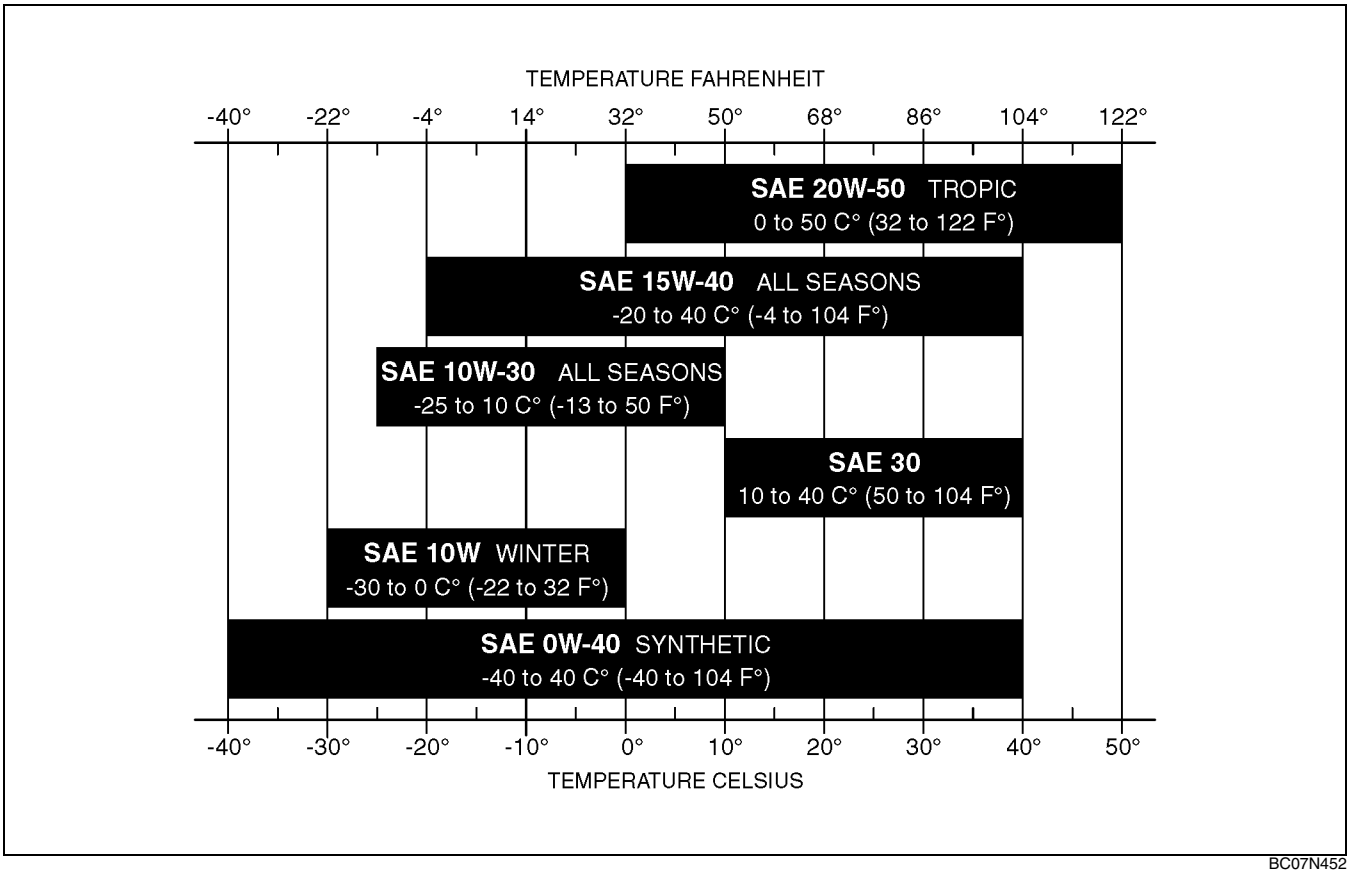
RH99K130

If Case AKCELA No.1 Multi-Viscosity or Single Grade Engine Oil is not available, use only oil meeting API engine oil service category CH-4.

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

BD03A102

NOTE: *Do not put Performance Additives or other oil additive products in the engine crankcase. The oil intervals given in the operators manual and service chart are according to tests with* Case AKCELA *lubricants.*



BC07N452

DIESEL FUEL

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 is below the cloud point (wax appearance point), wax crystals in the fuel will cause the engine to lose power or not start.*

The diesel fuel used in this machine must meet the specifications in the chart below 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.

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
Viscosity, at 100° F (88° C)	
Centistokes	2.0 to 4.3
Saybolt Seconds Universal	32 to 40

Section 1003

METRIC CONVERSION CHART

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Bur 7-52590

Printed in U.S.A.
Issued April, 2003

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CONVERSION FACTORS

Metric to U.S.

	MULTIPLY	BY	TO OBTAIN
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

	MULTIPLY	BY	TO OBTAIN
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

NOTES

SECTION INDEX

ENGINE

For Engine Repair, See Engine Service Manual 87630273

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Section 2000

ENGINE AND RADIATOR REMOVAL AND INSTALLATION

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Bur 5-12870

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RADIATOR

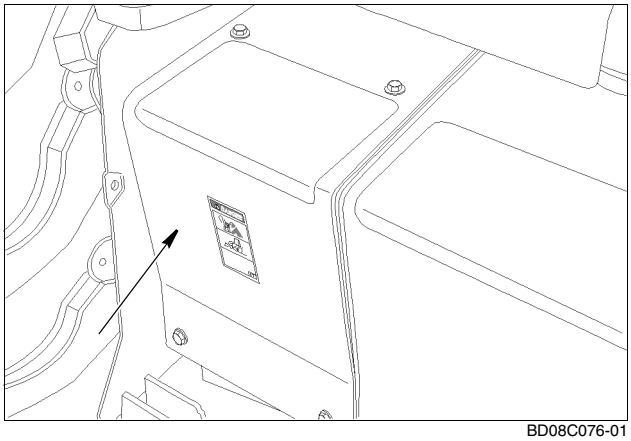
Removal

Put identification tags on all disconnected hoses and wires. Close disconnected hoses and fittings with caps and plugs.

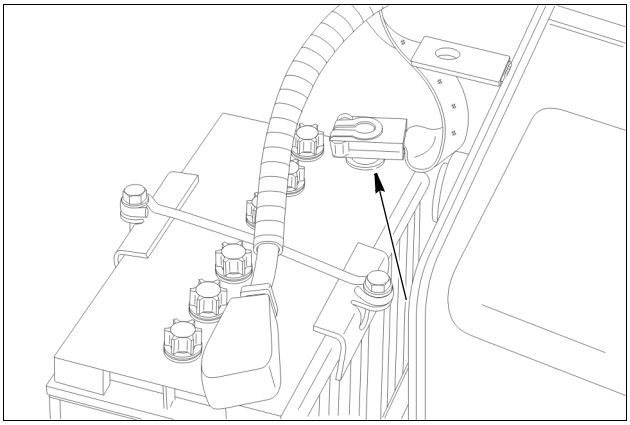
STEP 1
Park the machine on a level surface.

STEP 2
Lower the forks to the ground.

STEP 3
Stop the engine and apply the parking brake.

STEP 4

BD08C076-01

Remove the access cover from the battery compartment.

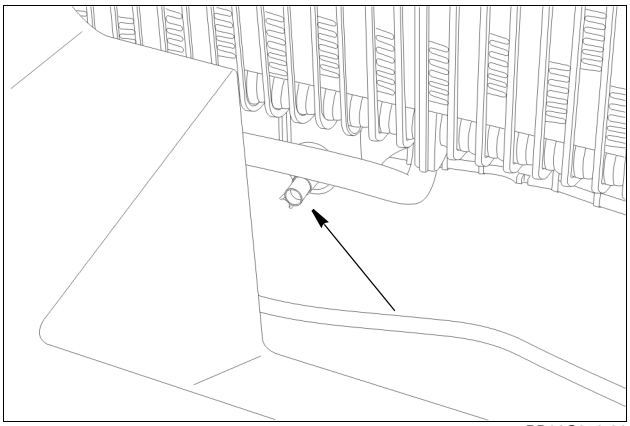
STEP 5

BD08C077-01

Disconnect the ground cable from the negative battery post.

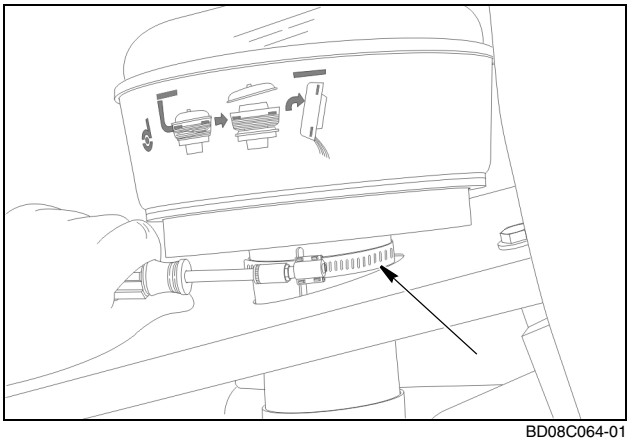
STEP 6


BD08C176-01

Remove the grille to gain access to the radiator drain.

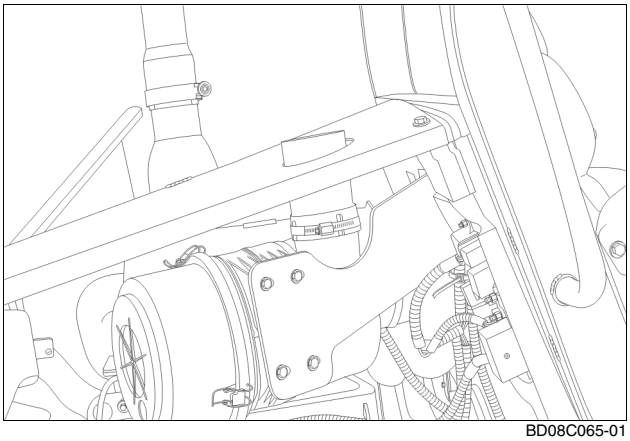
STEP 7

BD08C056-01

Use a suitable container to drain the cooling system. Open the drain valve on the radiator.

STEP 8

BD08C064-01

Loosen the clamp that fastens the precleaner assembly to the air cleaner.

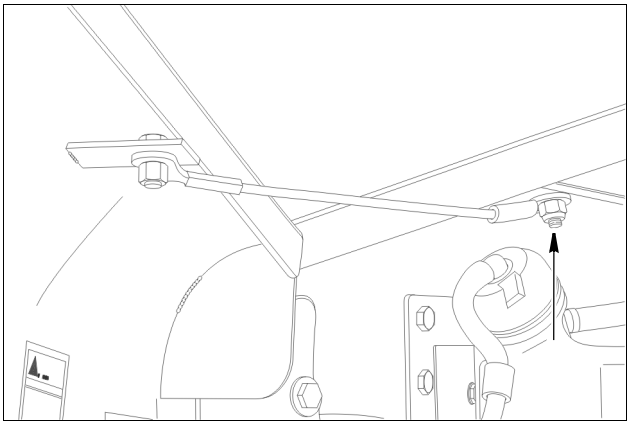
STEP 9



BD08C065-01

Remove the precleaner assembly from the air cleaner.

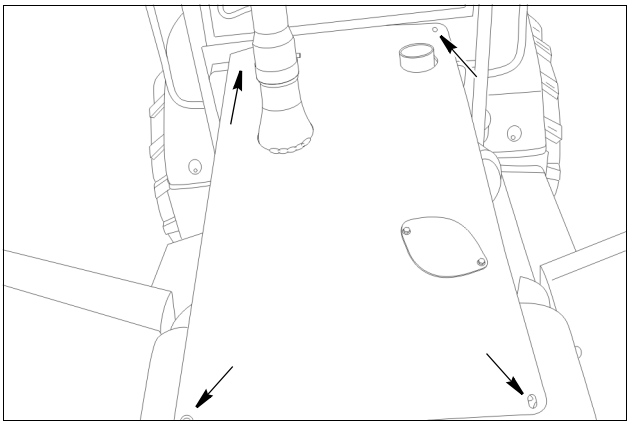
STEP 10



BD08C063-01

Open the side panel doors and disconnect the door cables from the hood.

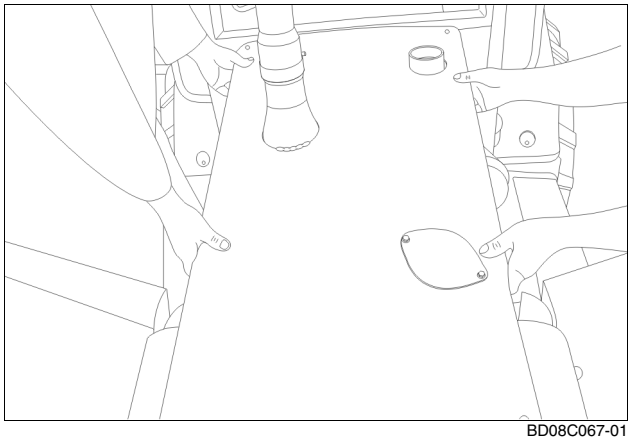
STEP 11



BD08C066-01

Loosen and remove the bolts and flat washers that fasten the hood to the machine.

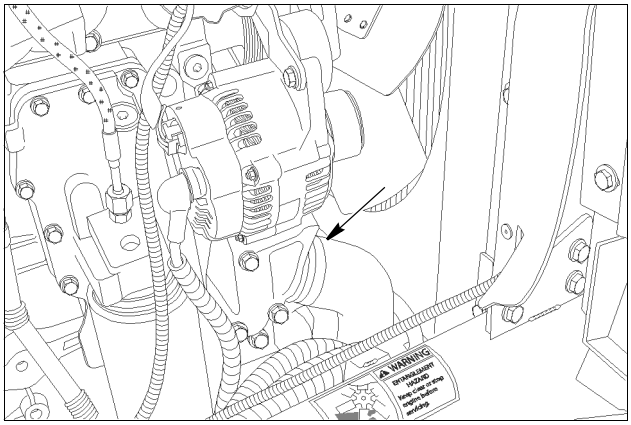
STEP 12



BD08C067-01

With an assistant, remove the hood from the machine.

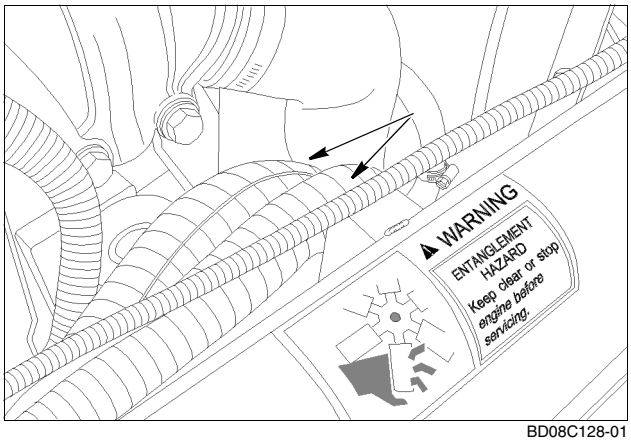
STEP 13



BD08C109-01

Remove the lower radiator hose from the engine.

STEP 14

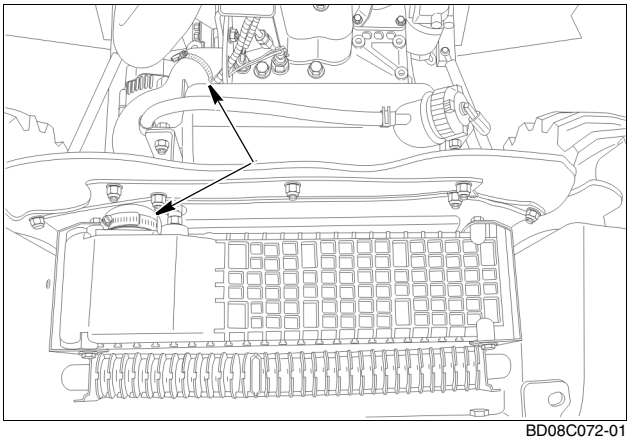


BD08C128-01

Disconnect the transmission cooler hoses going to the oil cooler. Install caps and plugs on the hoses and fittings.

NOTE: *You will loose some oil from the cooler.*

STEP 15



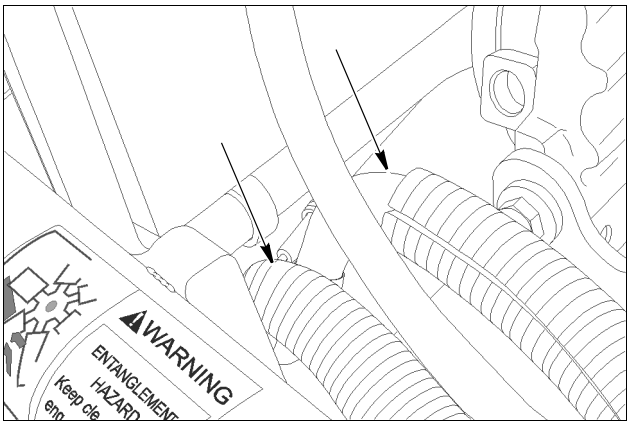
BD08C072-01

Loosen the clamps on the upper radiator hose. Remove the upper radiator hose.

STEP 16

Connect a vacuum pump to the hydraulic reservoir. Turn on the vacuum pump.

STEP 17



BD08C097-01

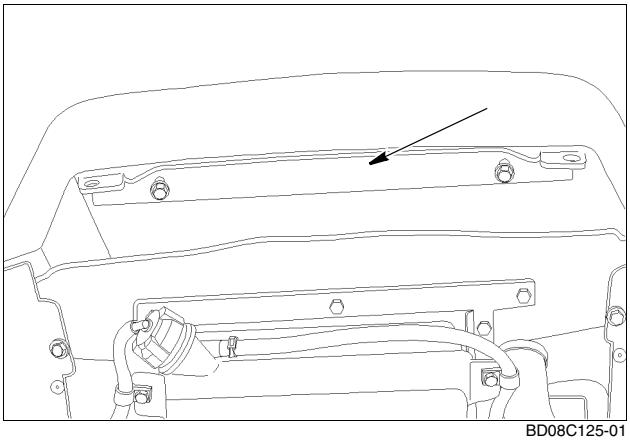
Disconnect the hydraulic hoses going to the oil cooler. Install caps and plugs on the hoses and fittings.

NOTE: *You will loose some oil from the cooler.*

STEP 18

Turn off vacuum pump.

STEP 19



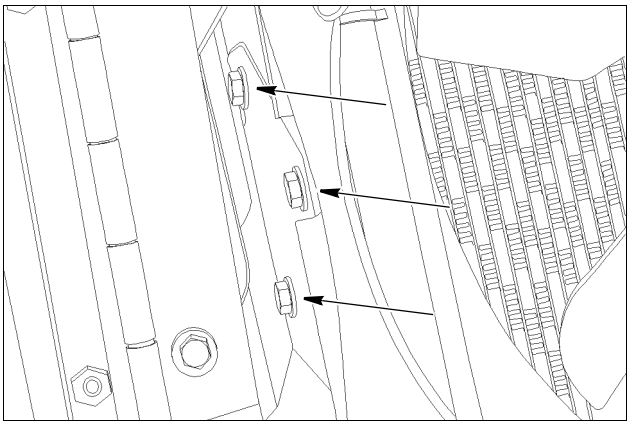
BD08C125-01

Remove the rear hood bracket.

STEP 20

Attach lifting equipment to the cooler pack.

STEP 21



BD08C096-01

Remove the 3 bolts and flat washers from the left and right radiator mount brackets.

STEP 22

Move the cooling package towards the rear of the machine for clearance between the shroud and the fan.

STEP 23

Remove the cooling package from the machine.

Installation

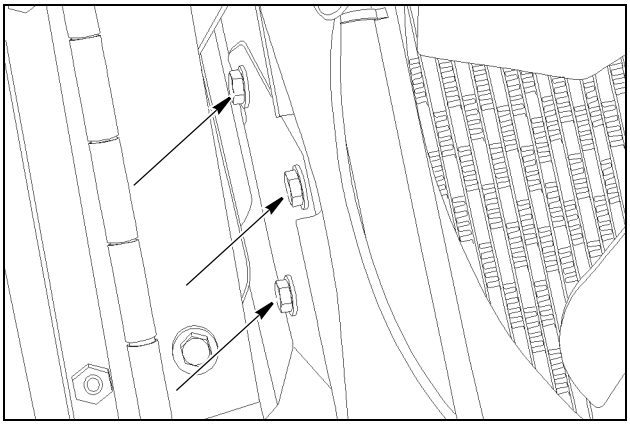
STEP 1

Attach lifting equipment to the cooler pack.

STEP 2

Lower the cooling pack into the machine. Keep clearance between the shroud and the fan.

STEP 3



BD08C096-01

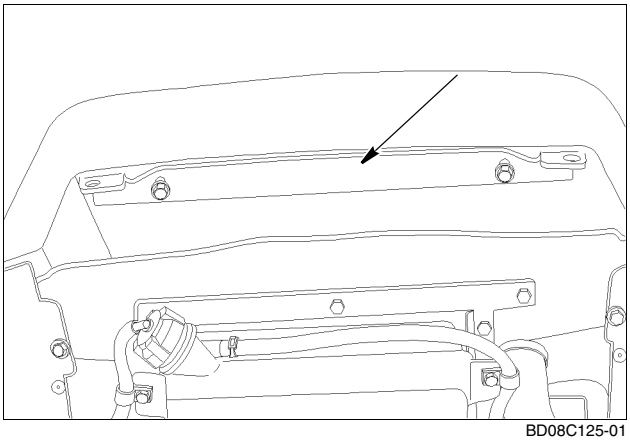
Install and tighten the 3 bolts and flat washers for the left and right radiator mount brackets.

NOTE: *Adjust the fan shroud until there is equal clearance around the fan. The minimum for this clearance is 5mm (0.8 inch).*

STEP 4

Remove lifting equipment from the cooling pack.

STEP 5



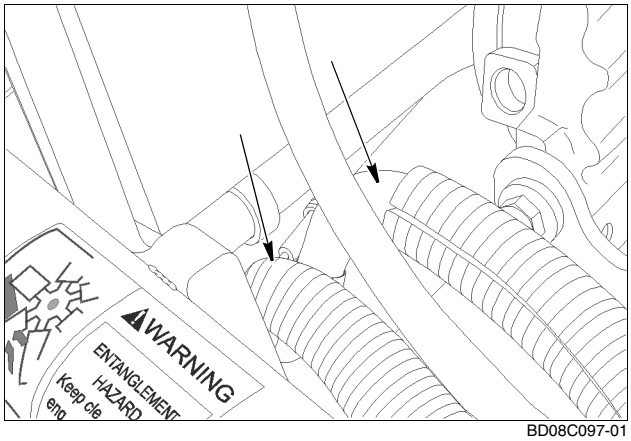
BD08C125-01

Install the rear hood bracket.

STEP 6

Turn on the vacuum pump.

STEP 7



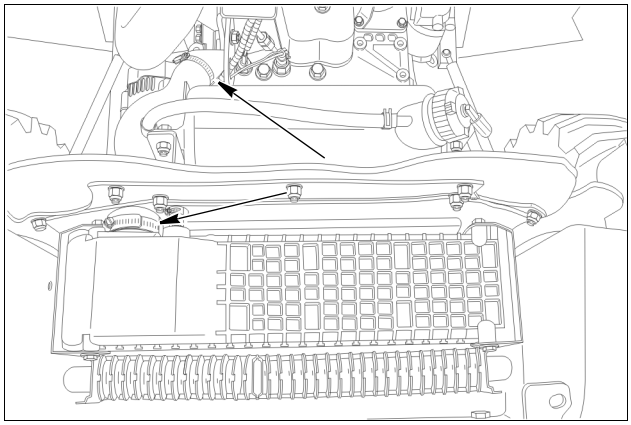
BD08C097-01

Remove the caps and plugs from the hoses and fittings. Connect the hydraulic hoses to the oil cooler. Tighten clamps to a torque of 5.5-8.0 Nm (48-70 pound-inches).

STEP 8

Turn off the vacuum pump. Disconnect the vacuum pump from the hydraulic reservoir.

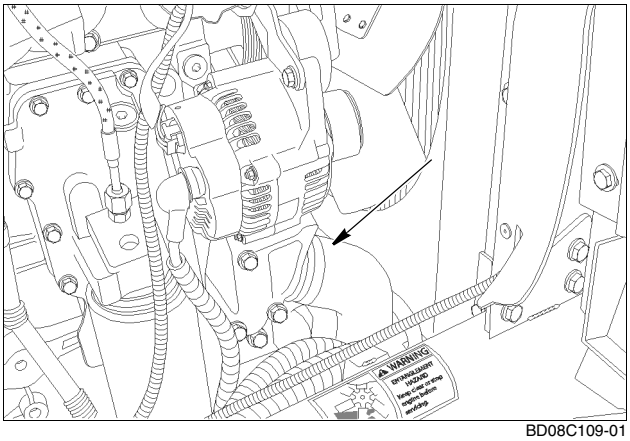
STEP 9



BD08C072-01

Install the upper radiator hose. Tighten the clamps on the upper radiator hose.

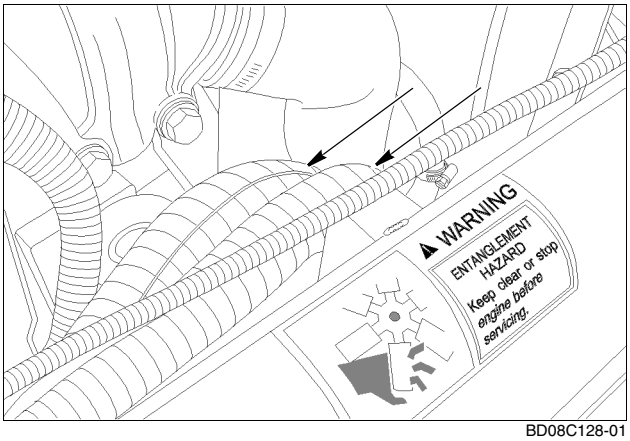
STEP 10



BD08C109-01

Install the bottom radiator hose. Tighten the clamp on the bottom radiator hose.

STEP 11



BD08C128-01

Remove the caps and plugs from the hoses and fittings. Connect the transmission lines to the oil cooler. Tighten clamps to a torque of 5.5-8.0 Nm (48-70 pound-inches).

NOTE: *Make sure screw portion of top clamp does not contact hose side of bottom cooler hose.*

STEP 12

Fill the radiator, transmission, and deairiation reservoir to the full line. See Section 1002 for specifications. Start and run the engine until the coolant is at operating temperature. Stop the engine and check for leakage. When the coolant is cold, check the coolant level. Add coolant as required.

ENGINE

Removal

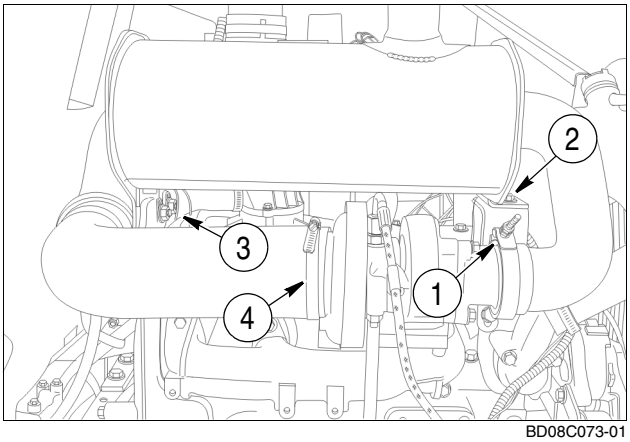
Put identification tags on all disconnected hoses and wires. Close disconnected hoses and fittings with caps and plugs.

STEP 1
Park the machine on a level surface.

STEP 2
Lower the forks to the ground.

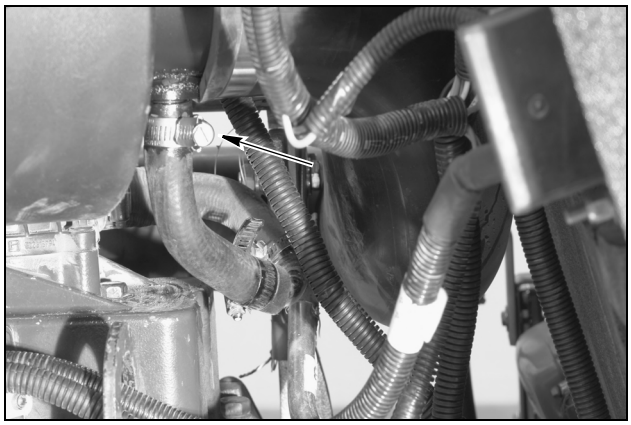
STEP 3
Stop the engine and apply the parking brake.

STEP 4
Remove the radiator per instructions this section.

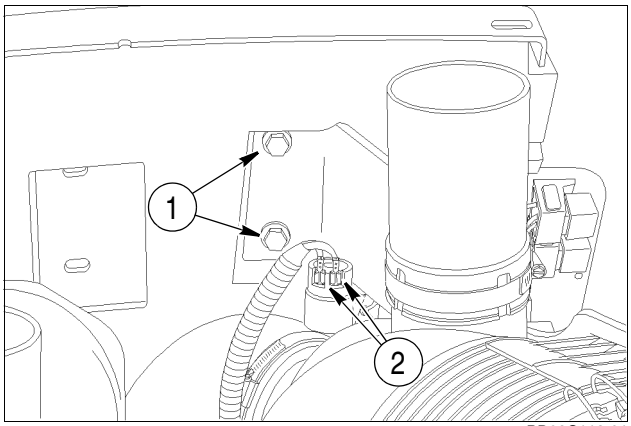
STEP 5


BD08C073-01

Remove the clamp (1), bolts, washers, and nuts (2), bolts, washers, and nuts (3). Remove the muffler from the machine. Loosen the clamp (4), that fastens the air cleaner hose to the adapter on the turbocharger. Remove the hose.

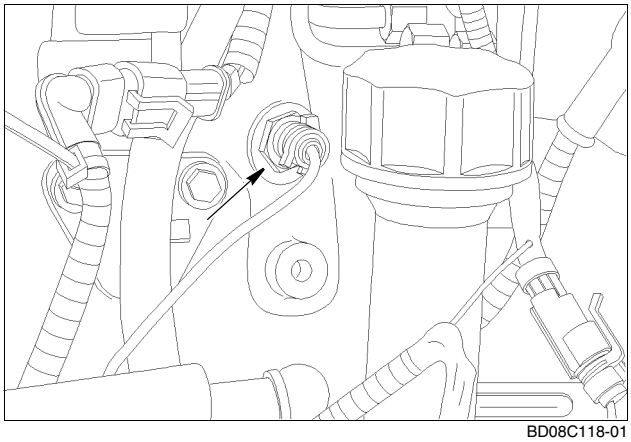
STEP 6

BD08C168-01

Disconnect the crank case ventilation hose.

STEP 7


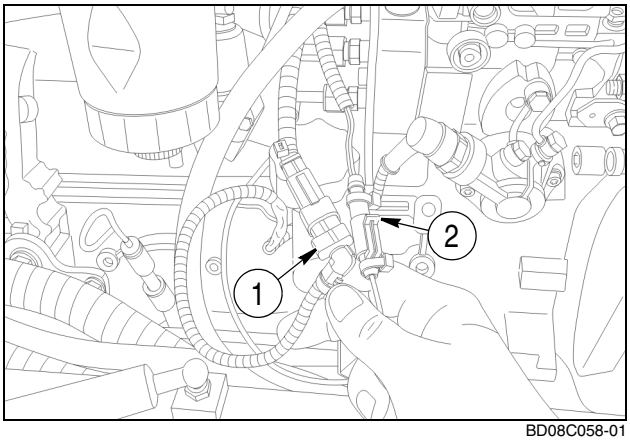
BD08C113-01

Disconnect the wires (2), from the air restriction indicator. Remove the air cleaner bracket bolts (1), from the cab. Remove the air cleaner from the machine.

STEP 8

BD08C118-01

Disconnect the oil pressure sender.

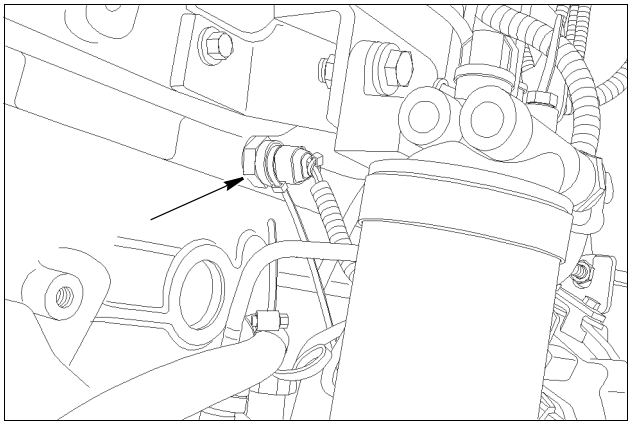
STEP 9



BD08C058-01

Disconnect the electrical connectors for the KKSB solenoid (1), and the fuel shutoff solenoid (2).

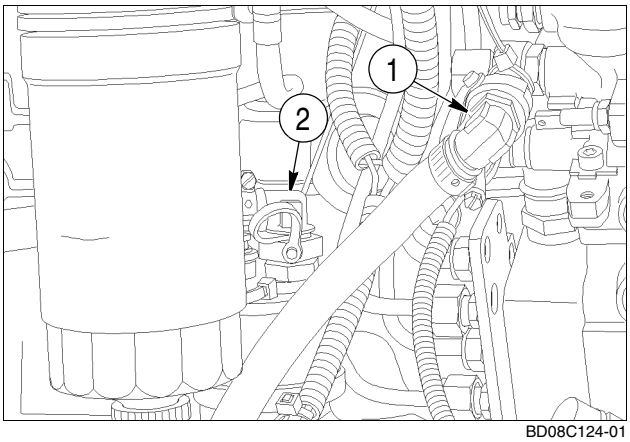
STEP 10



BD08C126-01

Disconnect the engine clod start KKSB switch.

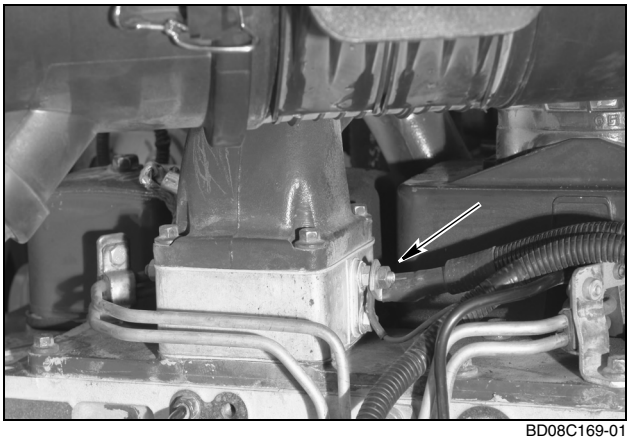
STEP 11



BD08C124-01

Disconnect the return fuel hose (1), from the high pressure fuel pump. Disconnect the fuel hose (2), from the mechanical fuel pump.

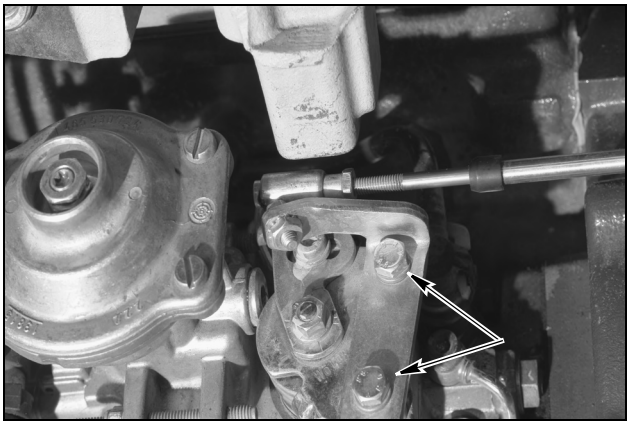
STEP 12



BD08C169-01

Disconnect grid heater positive cable and sensor wires.

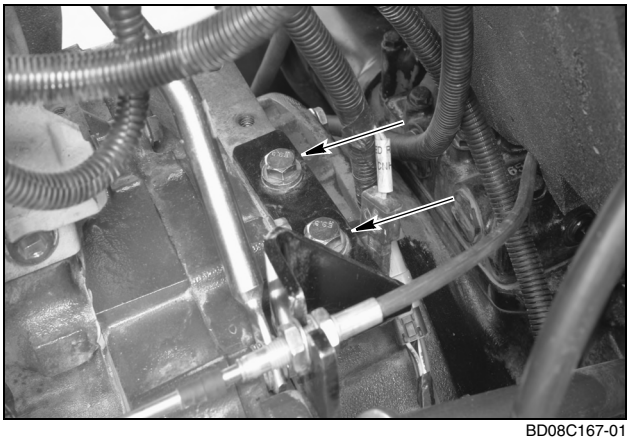
STEP 13



BD08C166-01

Loosen and remove the two bolts and flat washers that fastens the throttle cable to the fuel injection pump.

STEP 14



BD08C167-01

Loosen and remove the bolts from the throttle cable mounting bracket.

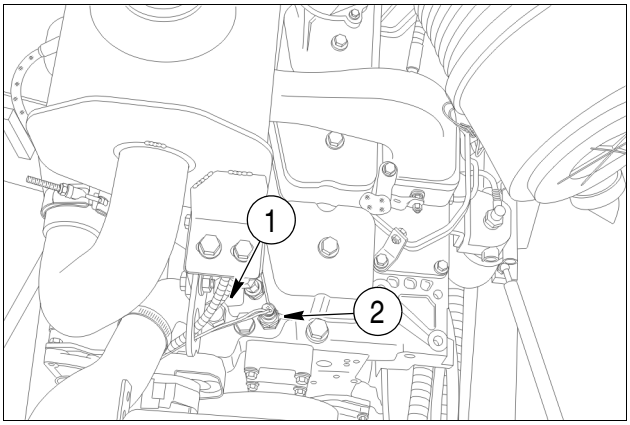
STEP 15

Move the throttle cable and mounting bracket out of the way.

STEP 16

Move the wiring harness for the right side of the engine out of the way.

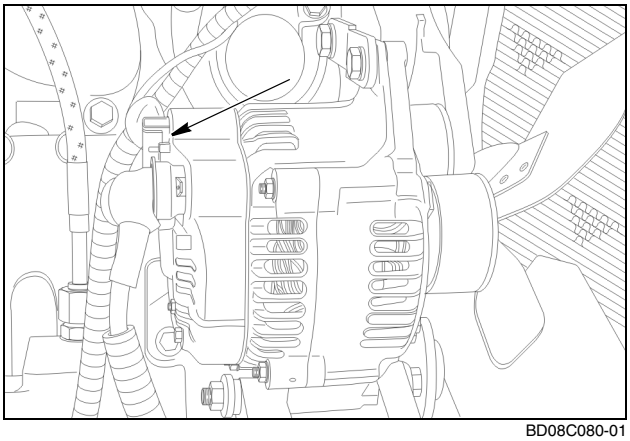
STEP 17



BD08C070-01

Remove the coolant temperature sender (1), and the coolant temperature switch (2), from the top of the engine (muffler shown installed).

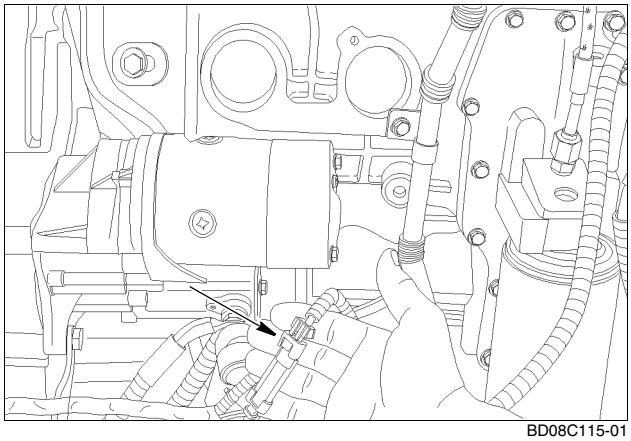
STEP 18



BD08C080-01

Disconnect the electrical connector from the alternator.

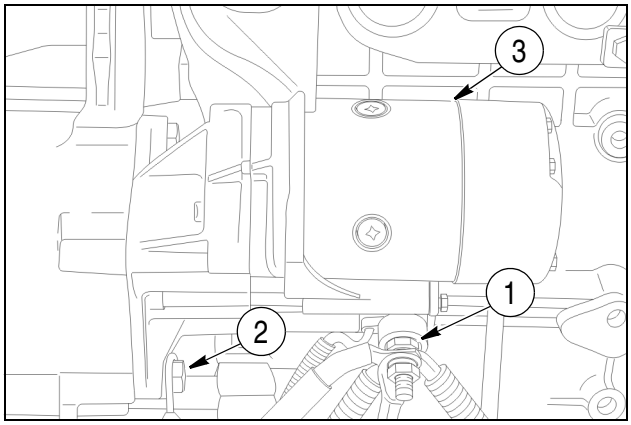
STEP 19



BD08C115-01

Disconnect the electrical connector on the starter.

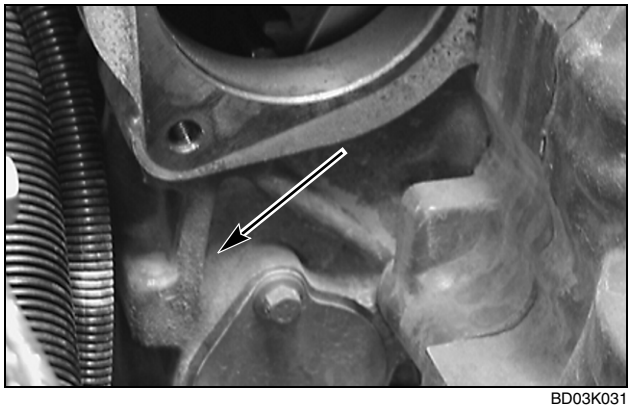
STEP 20



BD08C081-01

Remove the battery cable and wires (1), from the starter solenoid. Remove the grounding strap (2), from the starter solenoid. Remove the starter (3), from the engine.

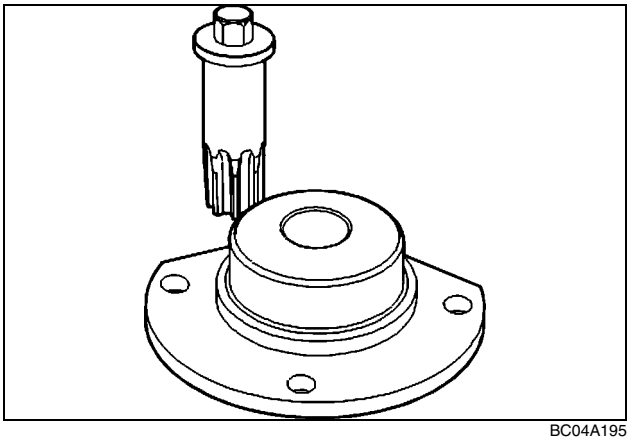
STEP 21



BD03K031

Remove the access cover from the bell housing.

STEP 22



BC04A195

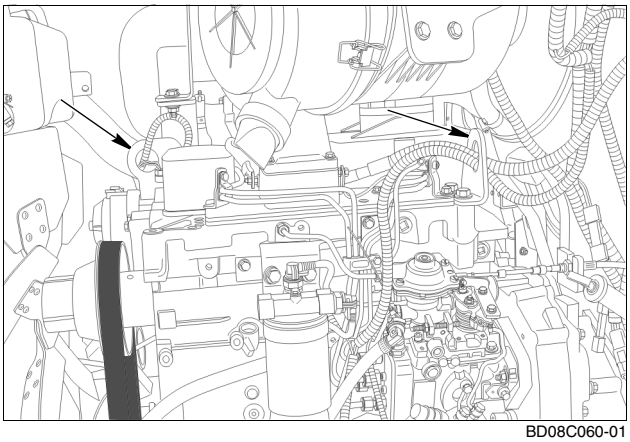
Install the engine turning tool, 380000988, to turn the flywheel for access to the bolts.

STEP 23

BD03K033

Loosen and remove six bolts that fastens the flywheel to the flex plate.

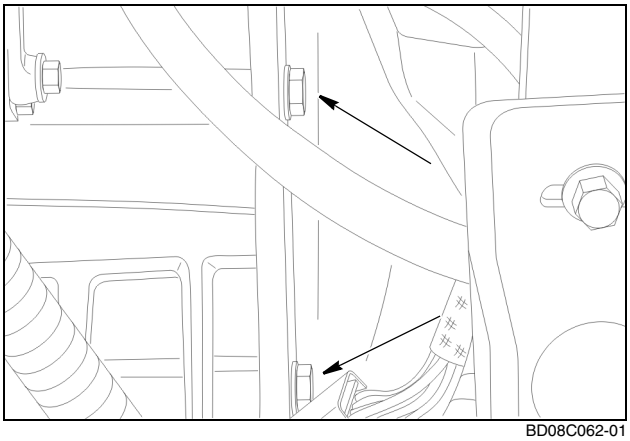
STEP 24



BD08C060-01

Connect lifting equipment to the lifting eyes on the engine to hold the engine in place.

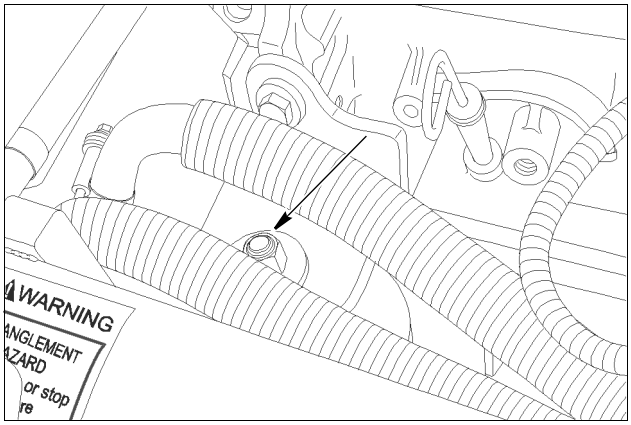
STEP 25



BD08C062-01

Loosen and remove the 12 bolts and washers that fastens the transmission to the flywheel housing.

STEP 26



BD08C101-01

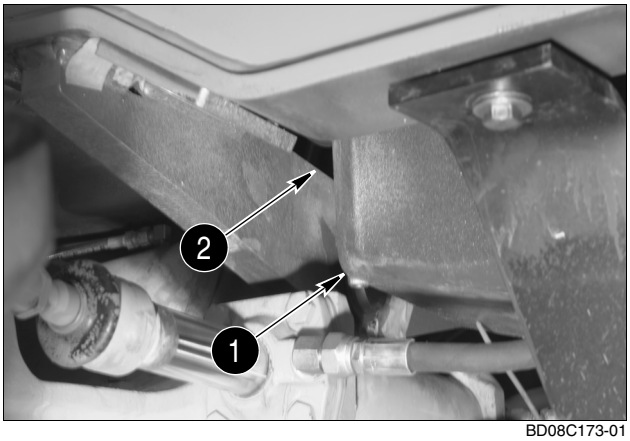
Loosen and remove the bolts, flat washers, and nuts that fastens the front left and right engine support brackets to the frame.

STEP 27

Raise the engine a short distance and move the engine forward.

IMPORTANT: *Make sure that the flex plate/converter assembly stays in place on the transmission. If the engine will be separated from the transmission for an extended period of time fasten the flex plate/converter assembly in place on the transmission.*

STEP 28



BD08C173-01

Raise the front of the engine until the oil pan (1), is clear of the rear frame (2).

STEP 29

Remove the engine from the machine.

Installation

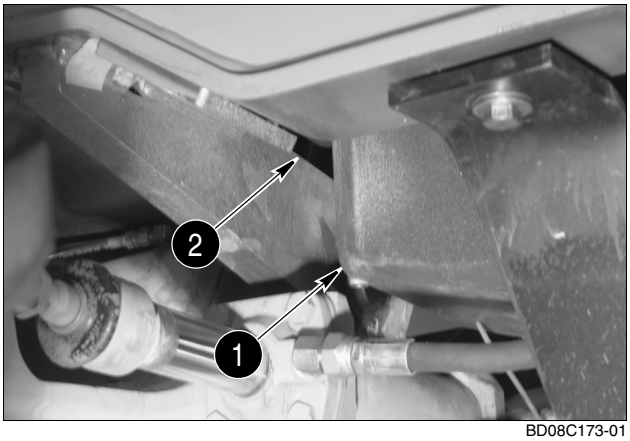
STEP 1

Connect lifting equipment to the lifting eyes on the engine.

STEP 2

Put the engine in position over the frame.

STEP 3



BD08C173-01

NOTE: *Ensure the engine oil pan (1), is clear of the frame (2), before lowering the engine.*

Lower the rear of the engine and move the engine toward the rear of the machine.

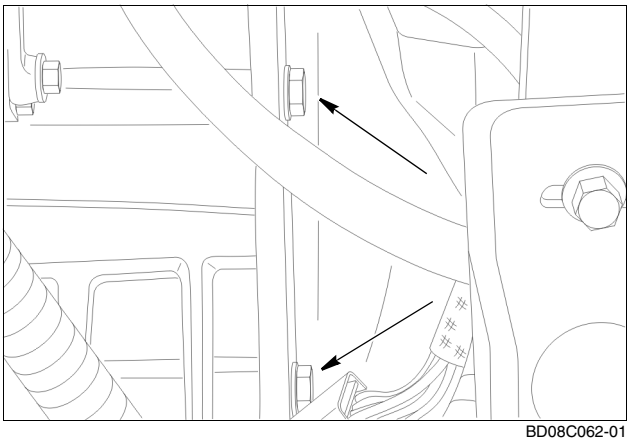
STEP 4

Lower the front of the engine until the engine is level.

STEP 5

Align the engine with the transmission.

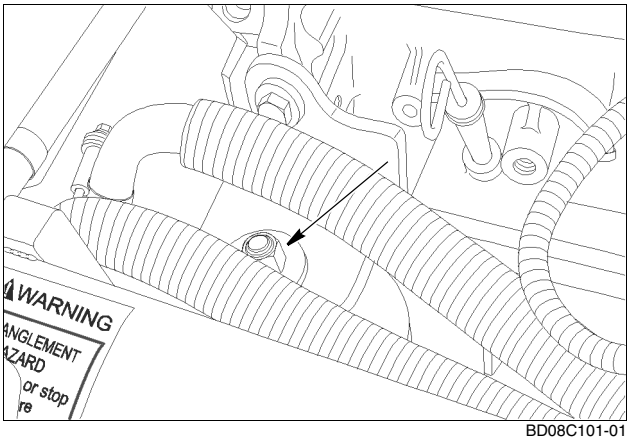
STEP 6



BD08C062-01

Install the 12 bolts and washers that fastens the transmission to the engine. Tighten bolts to a torque of 52-57 Nm (38-42 pound-feet).

STEP 7



BD08C101-01

Install the bolts, flat washers, and self-locking nuts that fasten the engine front support bracket to the frame. Make sure that the large flat washers and rubber insulators are in position.

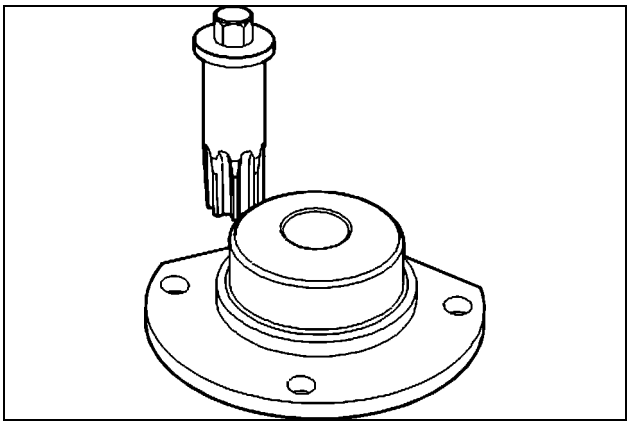
STEP 8

Tighten nuts to a torque of 90-100 Nm (67-73 pound-feet).

STEP 9

Remove the lifting equipment from the engine.

STEP 10

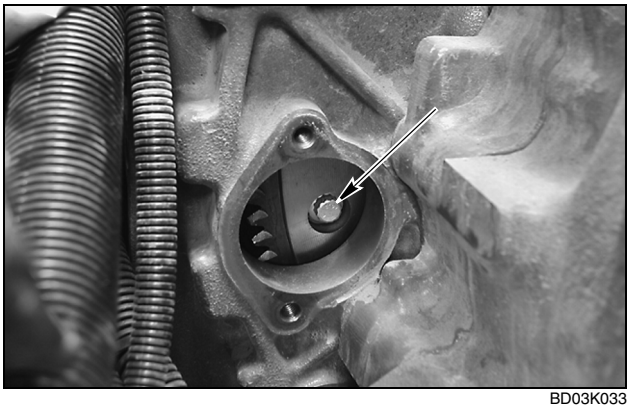


BC04A195

Install the engine turning tool, 380000988, to turn the flywheel to access a mounting hole in the flex plate.

NOTE: *Rotate the torque converter through the bottom hole of the bell housing and slide it against the adapter plate. Align the bolt hole with the bosses on the torque converter.*

STEP 11



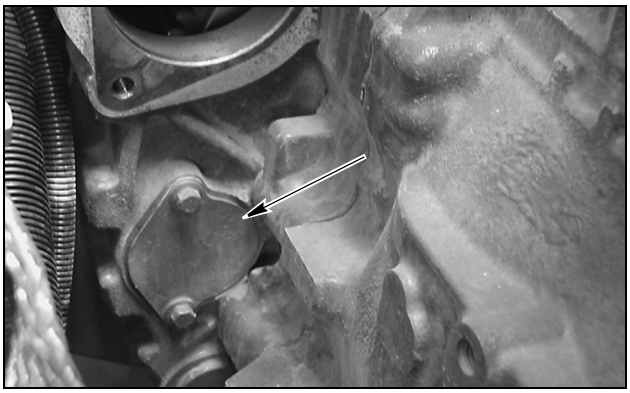
BD03K033

Install and hand tighten all six bolts that fasten the flex plate to the torque converter.

STEP 12

Torque the bolts to a torque of 52 to 57 Nm (38 to 42 lb-ft).

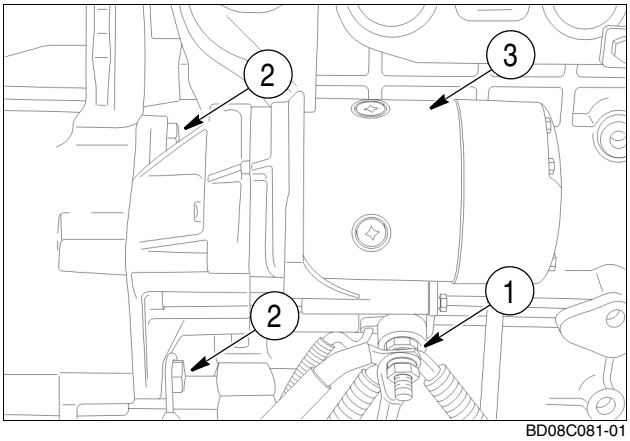
STEP 13



BD03K031

Install the flywheel access cover and tighten bolts.

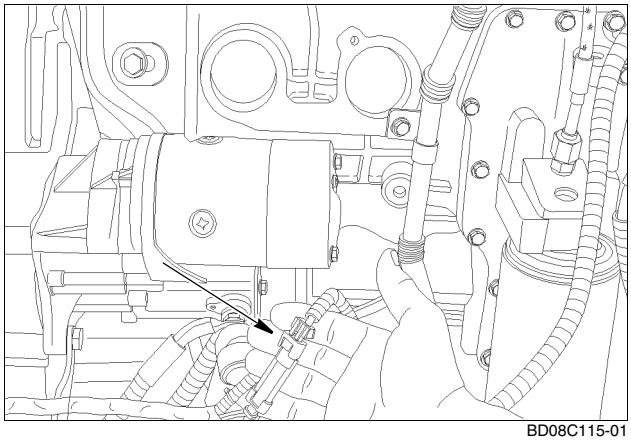
STEP 14



BD08C081-01

Install the starter (3). the grounding strap and mount bolts (2). Tighten bolts to a torque of 40-47 Nm (30-35 pound-feet). Install the battery cable and wires (1) and tighten nut to a torque of 17.5-24.5 Nm (13-18 pound-feet).

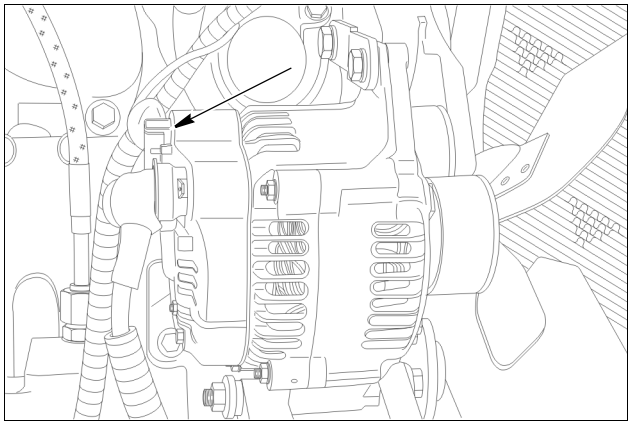
STEP 15



BD08C115-01

Connect the electrical connectors on the starter.

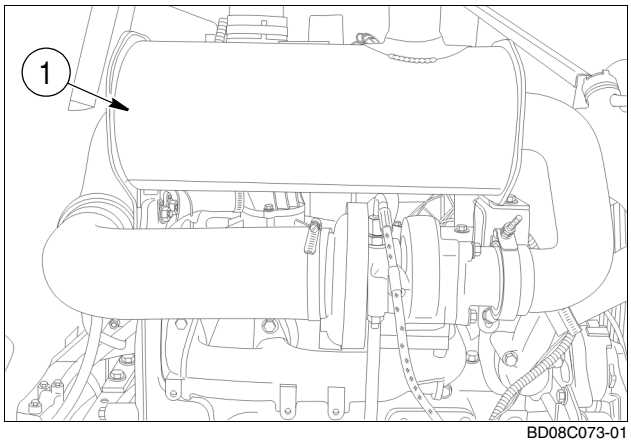
STEP 16



BD08C080-01

Connect the electrical connector to the alternator.

STEP 17

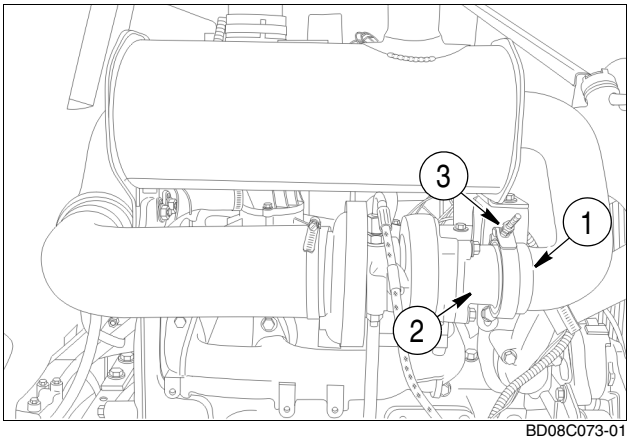


BD08C073-01

IMPORTANT: *To prevent damage to the exhaust system do the following procedures in sequence.*

Assemble muffler (1), to the engine with bolts finger tight. All gaps between mounting surfaces should be eliminated before torque sequence is started.

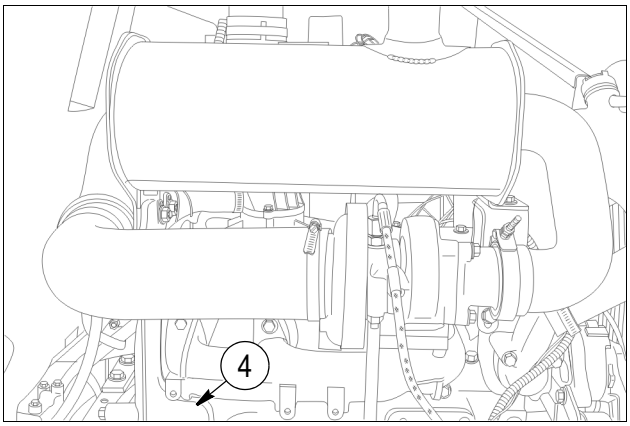
STEP 18



BD08C073-01

Align the muffler flange (1), with the turbo charger (2), and tighten the “T” bolt clamp (3), to a torque of 6.5 to 7.5 Nm (57.5 to 66.5 pound-inches).

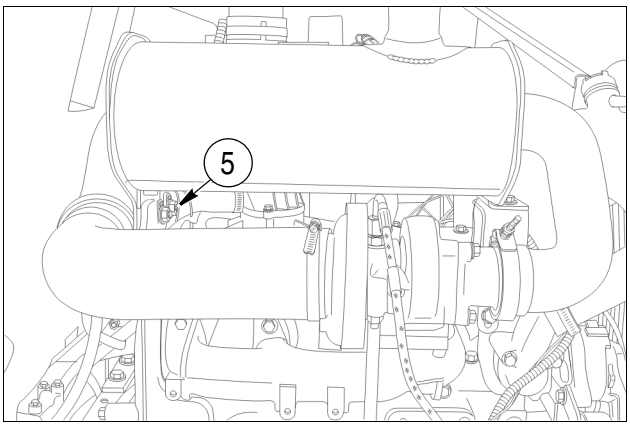
STEP 19



BD08C073-01

Tighten lower bolts on the front bracket (4), to block to a torque of 77 to 87 Nm (56 to 66.5 pound-feet).

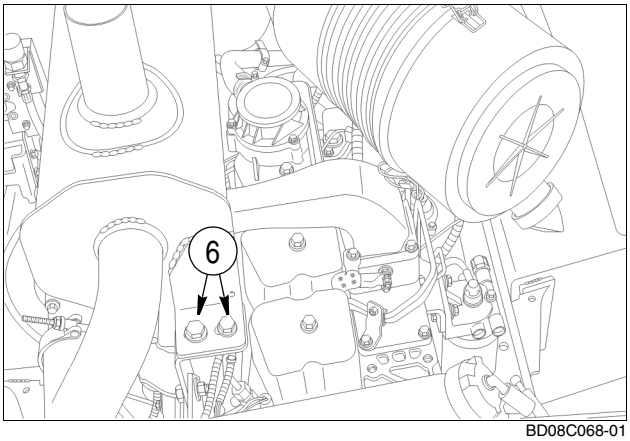
STEP 20



BD08C073-01

Tighten front bracket to muffler bolts (5), to a torque of 77 to 87 Nm (56 to 64 pound-feet).

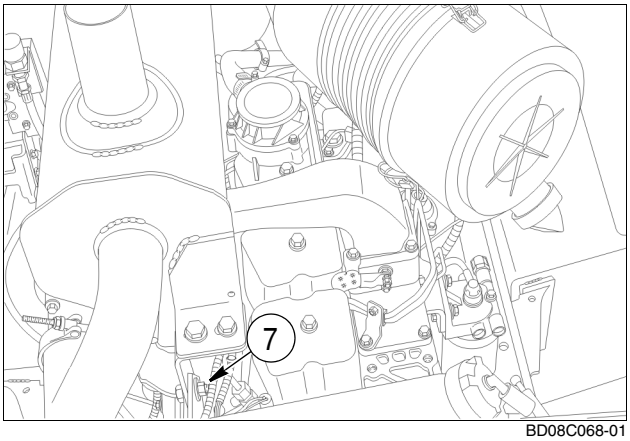
STEP 21



BD08C068-01

Tighten rear bracket to muffler bolts (6), to a torque of 77 to 87 Nm (56 to 64 pound-feet).

STEP 22



BD08C068-01

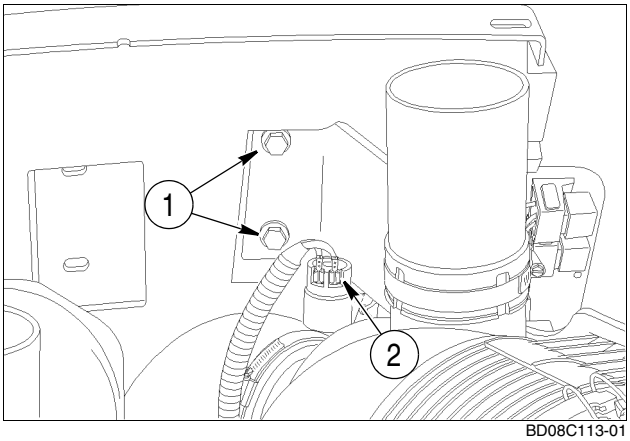
Tighten rear bracket to engine lifting bracket mounting nuts (7), to a torque of 77 to 87 Nm (56 to 64 pound-feet).

STEP 23

BD08C168-01

Connect the crank case ventilation hose and tighten the clamp.

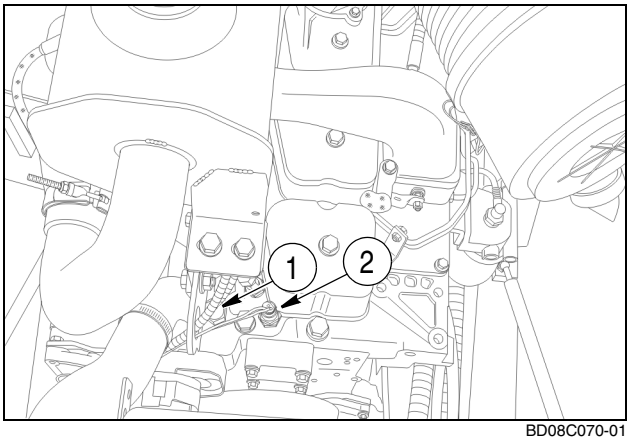
STEP 24



BD08C113-01

Install the air cleaner on the machine. Install and tighten the air cleaner bracket bolts (1), to the cab. Connect the wires (2), to the air restriction indicator.

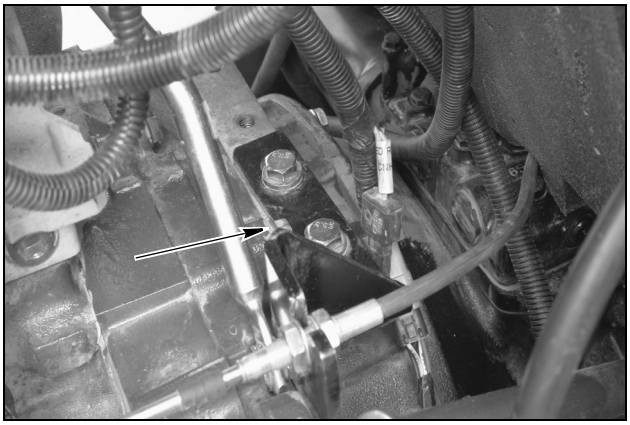
STEP 25



BD08C070-01

Connect the coolant temperature sender (1), and the coolant temperature switch (2), on top of the engine.

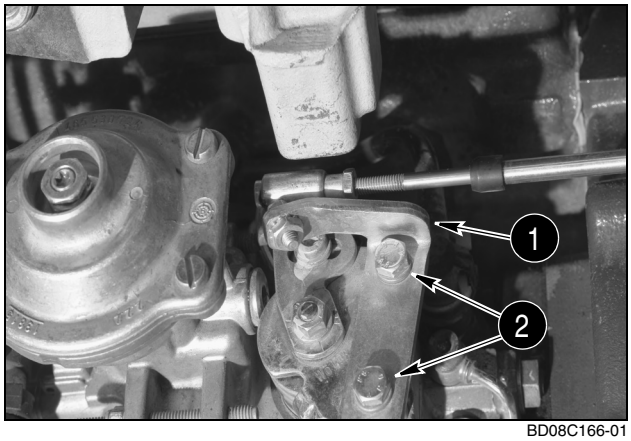
STEP 26



BD08C167-01

Install and tighten the bolts for the throttle cable mounting bracket.

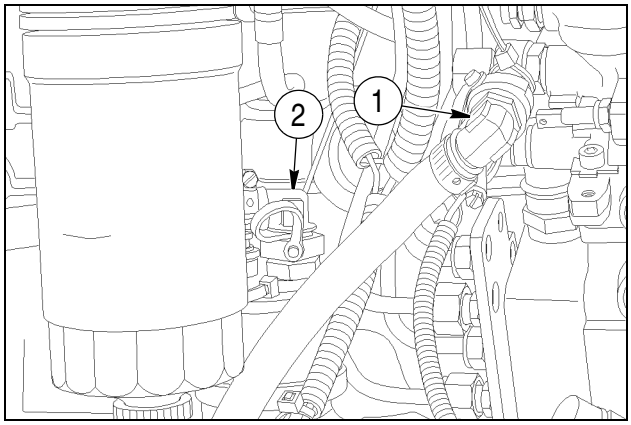
STEP 27



BD08C166-01

Install the throttle cable bracket (1), on the fuel injection pump. Install and tighten the bolts (2).

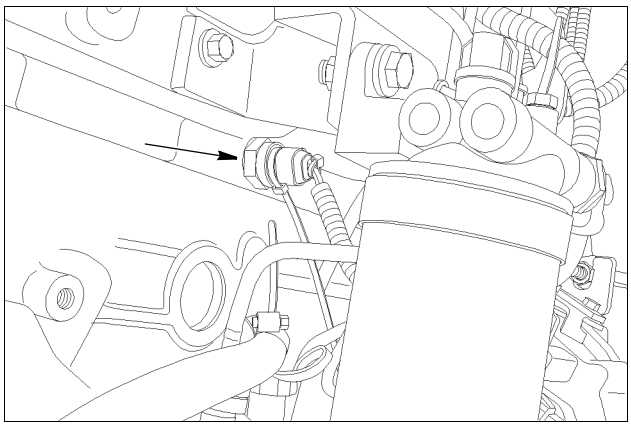
STEP 28



BD08C124-01

Connect the return fuel hose (1), to the high pressure fuel pump. Connect the fuel hose (2), to the mechanical fuel pump.

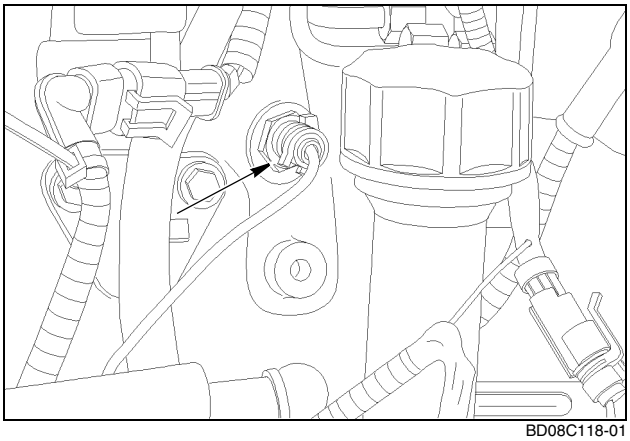
STEP 29



BD08C126-01

Connect the engine cold start KKSB switch.

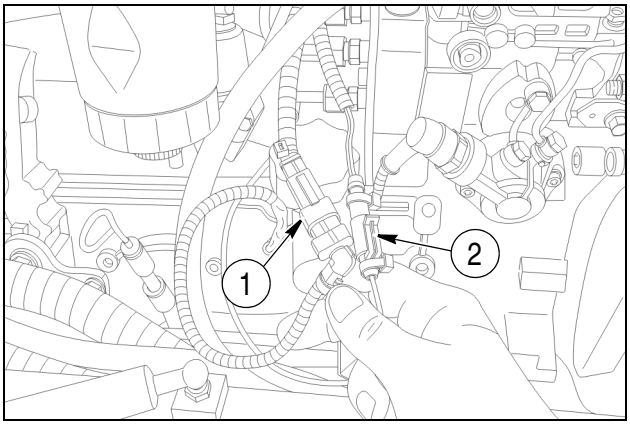
STEP 30



BD08C118-01

Connect the wire to the engine oil pressure sender.

STEP 31



BD08C058-01

Connect the electrical connectors to the engine KKSB solenoid (1), and the fuel shutoff solenoid (2).

STEP 32

Install the radiator per instructions this section.

STEP 33

Fill engine with oil, see Section 1002 for specifications.

STEP 34

Remove air from the fuel system as required. Start and run the engine at 1/2 throttle for approximately 5 minutes.

STEP 35

Stop the engine.

STEP 36

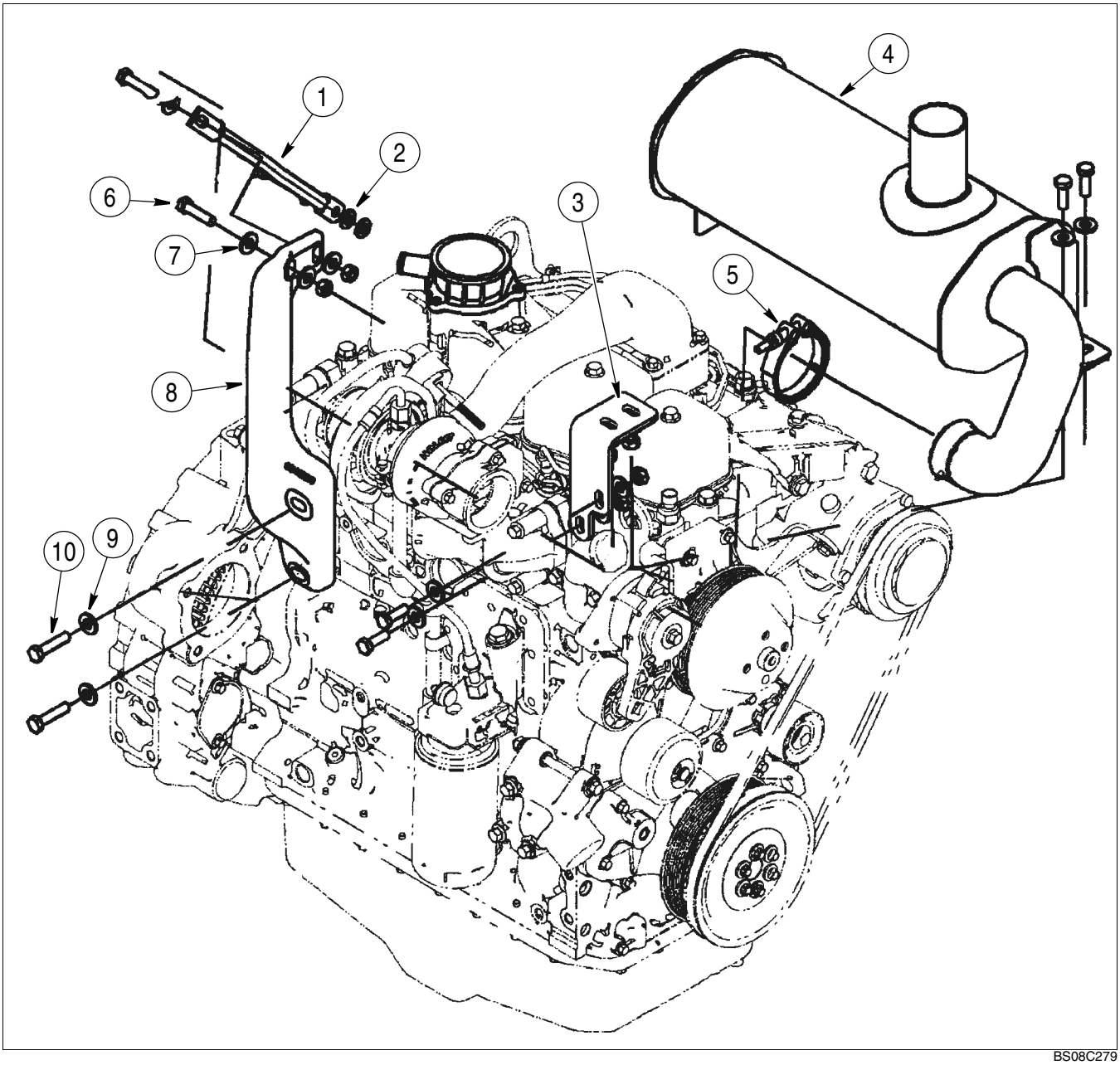
Check for leaks.

STEP 37

Wait approximately 30 minutes and check the fluid level in the coolant reservoir, add coolant as required.

Fill the engine and cooling system, see section 1002 for specifications.

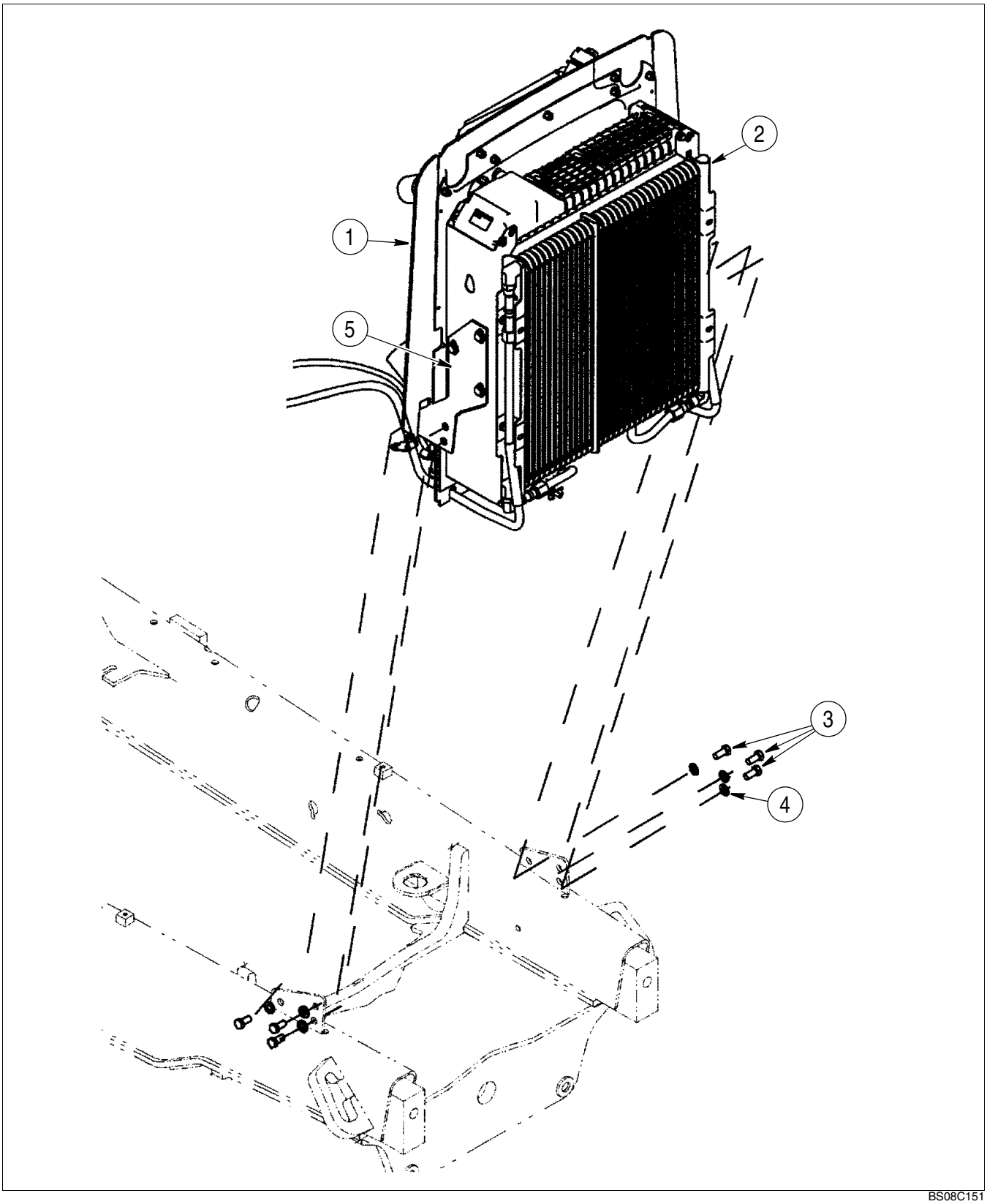
ILLUSTRATIONS



BS08C279

1. BRACE, FRONT
2. WASHER
3. BRACKET, REAR
4. MUFFLER
5. CLAMP, T-BOLT
6. BOLT
7. WASHER
8. BRACKET, FRONT
9. WASHER
10. BOLT

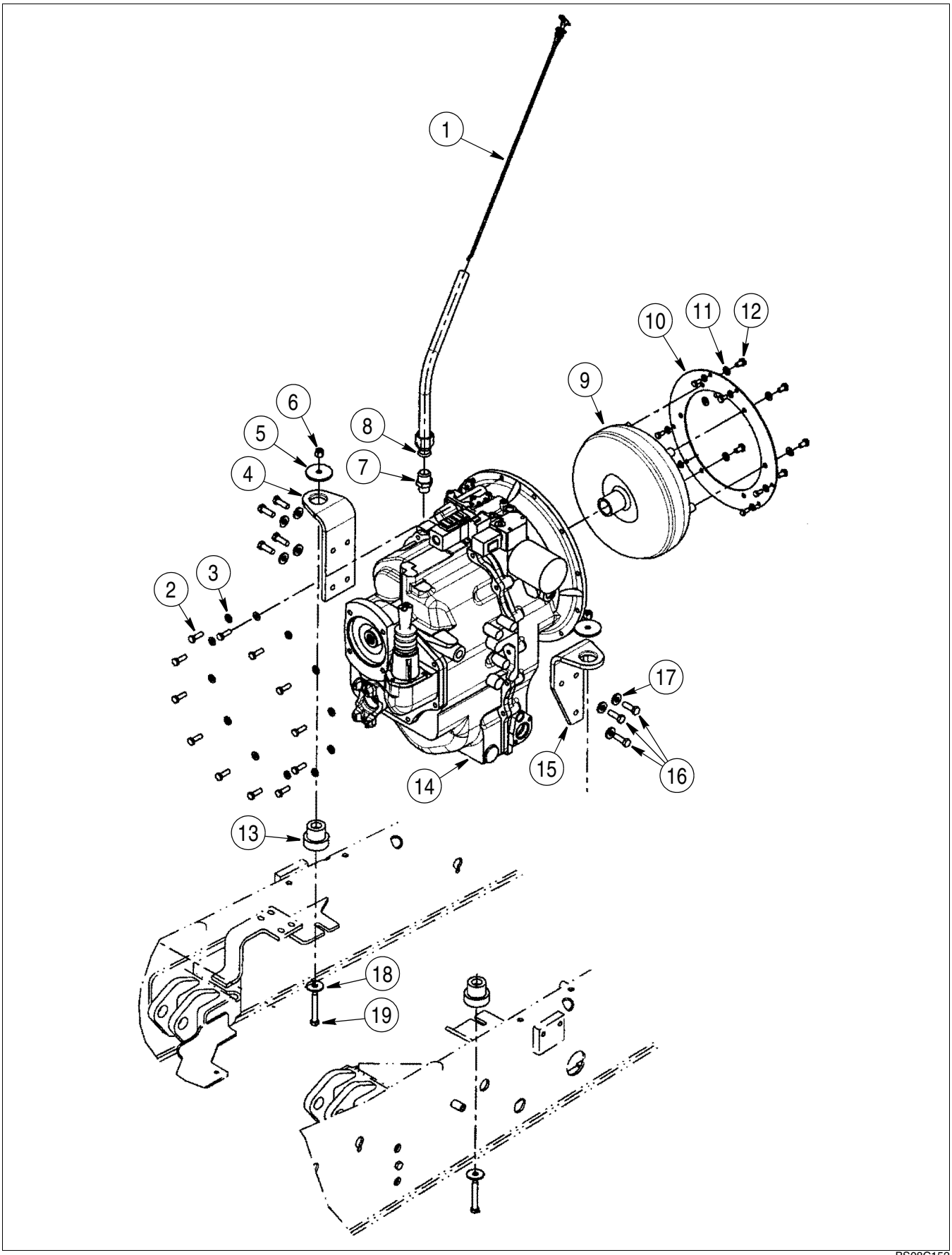
MUFFLER



BS08C151

1. RADIATOR
2. OIL COOLERS
3. BOLTS
4. WASHER
5. BRACKET

RADIATOR



BS08C152

TRANSMISSION