60 / 70XT SKID STEER
Service Manual
Bur 6-45720

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CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

Issued November, 2001

Reprinted

60 / 70XT SKID STEER
Service Manual
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SECTION INDEX

GENERAL

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

Bur 6-45740

Issued November, 2001

Section 1001

FLUIDS AND LUBRICANTS

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Hamilton, ON L7N 3M6 CANADA

Bur 6-44860

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September, 2001

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CAPACITIES AND LUBRICANTS

FUEL TANK
- Capacity ..... 83.3 litres (22 U.S. gallons)
- Specifications ..... See diesel fuel specifications on page 5

COOLING SYSTEM
- Capacity .....16.6 litres (17.5 quarts)
- Recovery bottle capacity ..... 2 litres (2.1 quarts)
- Specifications ..... 50% water and 50% ethylene glycol

HYDRAULIC SYSTEM
- Capacity - System ..... 50.2 litres (13.3 gallons)
- Specifications ..... Case No. 1 Engine Oil SAE 10W30
  ..... add 1.4 litres (1.5 quarts) HTA Wear Additive

CHAIN COMPARTMENTS
- Capacity - Each Side ..... 5.7 litres (6.0 quarts)
- Specifications ..... Case No. 1 Engine Oil, SAE 10W30

BATTERY
- Quantity ..... As required
- Specifications ..... Distilled water

GREASE FITTINGS
- Quantity ..... As required
- Attachments (If equipped) ..... Quantity as required
- Specifications ..... Case molydisulfide grease

ENGINE CRANKCASE OIL
- Capacity - with filter change ..... 10.4 litres (11.0 quarts)
- Capacity - without filter change ..... 9.5 litres (10.0 quarts)
- Specifications ..... Case No. 1 Engine Oil SAE 15W-40 (API service CH-4)
  ..... (See Oil Viscosity/Temperature Ranges Chart on page 4)

ENVIRONMENT

Before you service this machine and dispose of oil, fluids and lubricants, always remember the environment. Do not put oil or fluids into the ground or into containers that can leak. Check with your local environmental, recycling center or your Case dealer for correct disposal information.

ENGINE LUBRICATION

Engine Oil Selection

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

RH99K130

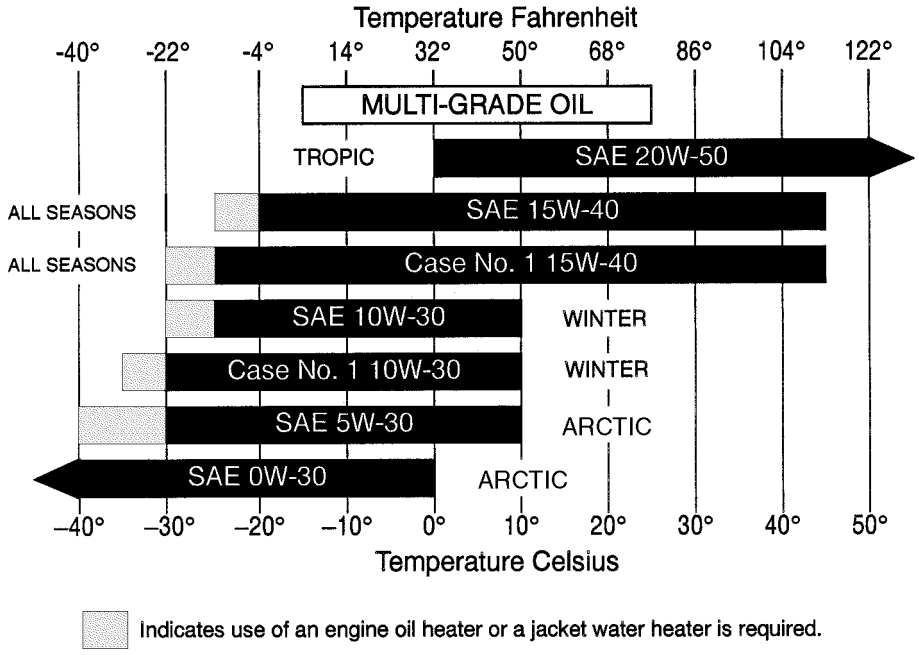
Case Multi-Viscosity Engine Oil meets API engine oil service category CH-4

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

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

BS00H001

Oil Viscosity/Temperature Ranges



BS99N019

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: *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 loose power or not start.*

The diesel fuel used in this machine must meet the specifications below, “Specifications for Acceptable No. 2 Diesel Fuel” 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.

Fill the fuel tank at the end of the daily operating period to prevent condensation in the fuel tank.

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)
Pour Point, Maximum	-26°C (-15°F)
Distillation Temperature, 90% Point	282 to 338°C (540 to 640°F)
Viscosity, at 38°C (100°F)	
Centistokes	2.0 to 4.3
Saybolt Seconds Universal	32 to 40
Cetane Number, Minimum	43 (45 to 55 for winter or high altitudes)
Water and Sediment, by Volume, Maximum	0.5 of 1%
Sulphur, by Weight, Maximum	0.5 of 1%
Copper Strip Corrosion, Maximum	No. 2
Ash, by Weight, Maximum	0.1 of 1%

NOTES

Section

1002

STANDARD TORQUE SPECIFICATIONS

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

Bur 7-52931

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September, 1998

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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	Newton metres	Pound-Inches
1/4 inch	10 to 12	91 to 103
5/16 inch	21 to 24	188 to 212
3/8 inch	38 to 43	336 to 378
		Pound-Feet
7/16 inch	61 to 69	45 to 51
1/2 inch	94 to 104	68 to 76
9/16 inch	132 to 149	98 to 110
5/8 inch	183 to 210	138 to 155
3/4 inch	325 to 370	242 to 270
7/8 inch	530 to 595	390 to 435
1.0 inch	790 to 890	585 to 655
1-1/8 inch	980 to 1100	725 to 805
1-1/4 inch	1385 to 1555	1020 to 1145
1-3/8 inch	1810 to 2030	1335 to 1495
1-1/2 inch	2400 to 2700	1770 to 1990

Grade 8 Bolts, Nuts, and Studs

Size	Newton metres	Pound-Inches
1/4 inch	15 to 16	130 to 145
5/16 inch	30 to 34	268 to 301
3/8 inch	54 to 60	474 to 534
		Pound-Feet
7/16 inch	86 to 97	63 to 71
1/2 inch	132 to 149	96 to 110
9/16 inch	191 to 213	140 to 155
5/8 inch	260 to 293	190 to 215
3/4 inch	480 to 515	340 to 380
7/8 inch	745 to 835	550 to 615
1.0 inch	1120 to 1280	825 to 925
1-1/8 inch	1585 to 1785	1170 to 1315
1-1/4 inch	2215 to 2235	1650 to 1855
1-3/8 inch	2930 to 3295	2160 to 2430
1-1/2 inch	3895 to 4375	2870 to 3225

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 both coarse and fine 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. Use of a click type torque wrench, or better is required.

Grade 8.8 Bolts, Nuts, and Studs

Size	Newton metres	Pound-Inches
M4	3 to 4	31 to 35
M5	5 to 6	49 to 55
M6	10 to 11	84 to 94
M8	23 to 26	229 to 277
M10	46 to 51	408 to 460
		Pound-Feet
M12	80 to 90	59 to 66
M14	128 to 145	94 to 106
M16	200 to 220	149 to 161
M20	400 to 450	293 to 330
M24	690 to 780	510 to 575
M30	1375 to 1545	1010 to 1140
M36	2400 to 2700	1770 to 1990

Grade 10.9 Bolts, Nuts, and Studs

Size	Newton metres	Pound-Inches
M4	5 to 6	44 to 49
M5	8 to 9	71 to 79
M6	14 to 15	120 to 136
M8	33 to 37	293 to 329
		Pound-Feet
M10	65 to 74	48 to 54
M12	114 to 128	85 to 94
M14	183 to 205	136 to 153
M16	285 to 320	208 to 235
M20	555 to 620	406 to 460
M24	955 to 1075	705 to 790
M30	1900 to 2140	1400 to 1580
M36	3315 to 3730	2445 to 2750

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				
Nom. SAE Dash Size	**Tube OD/Hose ID**	**Thread Size**	**Newton metres**	**Pound-Inches**
-2		5/16 - 24	8 to 9	72 to 84
-3		3/8 - 24	11 to 12	96 to 108
-4	6.4 mm (1/4 inch)	7/16 - 20	14 to 16	120 to 144
-5	7.9 mm (5/16 inch)	1/2 - 20	18 to 21	156 to 192
-6	9.5 mm (3/8 inch)	9/16 - 18	27 to 33	240 to 300
-8	12.7 mm (1/2 inch)	3/4 - 16	46 to 56	408 to 504
-10	15.9 mm (5/8 inch)	7/8 - 14	77 to 85	684 to 756
				Pound-Feet
-12	19.0 mm (3/4 inch)	1-1/16 - 12	107 to 119	79 to 88
-14	22.2 mm (7/8 inch)	1-3/16 - 12	127 to 140	94 to 103
-16	25.4 mm (1.0 inch)	1-5/16 - 12	131 to 156	97 to 117
-20	31.8 mm (1-1/4 inch)	1-5/8 - 12	197 to 223	145 to 165
-24	38.1 mm (1-1/2 inch)	1-7/8 - 12	312 to 338	230 to 250

Straight Threads with O-ring				
Nom. SAE Dash Size	**Tube OD/Hose ID**	**Thread Size**	**Newton metres**	**Pound-Inches**
-2		5/16 - 24	8 to 9	72 to 84
-3		3/8 - 24	11 to 12	96 to 108
-4	6.4 mm (1/4 inch)	7/16-20	20 to 25	180 to 228
-5	7.9 mm (5/16 inch)	1/2-20	27 to 33	240 to 300
-6	9.5 mm (3/8 inch)	9/16-18	43 to 54	384 to 480
-8	12.7 mm (1/2 inch)	3/4-16	73 to 90	648 to 804
				Pound-Feet
-10	15.9 mm (5/8 inch)	7/8-14	100 to 124	74 to 92
-12	19.0 mm (3/4 inch)	1-1/16-12	138 to 173	102 to 128
-14	22.2 mm (7/8 inch)	1-3/16-12	173 to 216	128 to 160
-16	25.4 mm (1.0 inch)	1-5/16-12	203 to 253	150 to 187
-20	31.8 mm (1-1/4 inch)	1-5/8-12	308 to 357	227 to 264
-24	38.1 mm (1-1/2 inch)	1-7/8-12	492 to 542	363 to 400

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

O-Ring Face Seal End					O-Ring Boss End Fitting or Lock Nut		
Nom. SAE Dash Size	**Tube OD**	**Thread Size**	**Newton metres**	**Pound-Inches**	**Thread Size**	**Newton metres**	**Pound-Inches**
-4	6.4 mm (1/4 inch)	9/16-18	23 to 26	204 to 228			
-6	9.5 mm (3/8 inch)	11/16-16	34 to 40	300 to 348	9/16-18	48 to 54	432 to 480
-8	12.7 mm (1/2 inch)	13/16-16	52 to 57	456 to 504	3/4-16	70 to 78	612 to 684
							Pound-Feet
-10	15.9 mm (5/8 inch)	1-14	81 to 90	720 to 792	7/8-14	102 to 114	75 to 84
				Pound-Feet			
-12	19.0 mm (3/4 inch)	1-3/16-12	117 to 128	86 to 94	1-1/16-12	142 to 160	105 to 117
-16	25.4 mm (1.0 inch)	1-7/16-12	152 to 174	112 to 128	1-5/16-12	237 to 254	175 to 187
-20	31.8 mm (1-1/4 inch)	1-11/16-12	179 to 201	132 to 148			
-24	38.1 mm (1-1/2 inch)	2-12	213 to 235	157 to 173			

Pipe fittings		
Nom. SAE Dash Size	**Thread Size**	**TFFT (Turns For Finger Tight)**
-2	1/8 - 27	2.0 - 3.0
-3	1/8 - 27	2.0 - 3.0
-4	1/8 - 27	2.0 - 3.0
-5	1/8 - 27	2.0 - 3.0
-6	1/4 - 18	1.5 - 3.0
-8	3/8 - 18	2.0 - 3.0
-10	1/2 - 14	2.0 - 3.0
-12	3/4 - 14	2.0 - 3.0
-14	3/4 - 14	2.0 - 3.0
-16	1 - 11 1/2	1.5 - 2.5
-20	1 1/4 - 11 1/2	1.5 - 2.5
-24	1 1/2 - 11 1/2	1.5 - 2.5
-32	2 - 11 1/2	1.5 - 2.5

NOTE: *Apply sealant/lubricant to male pipe threads. The first two threads should be left uncovered to avoid system contamination. Screw pipe fitting into female pipe port to the finger tight position. Wrench tighten fitting to the appropriate turns from finger tight (TFFT) shown in table above, making sure the tube end of an elbow or tee fitting is aligned to receive incoming tube or hose fitting.*

Section

1003

METRIC CONVERSION CHART

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

Bur 7-52950

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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

NOTICE

INSERT THE FOLLOWING:

Loctite Product Chart
8-98902

NOTICE

SECTION INDEX

ENGINE

For Engine Repair, see the Engine Service Manual

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

Bur 6-45750

Issued November, 2001

2000

Section 2000

ENGINE AND RADIATOR REMOVAL AND INSTALLATION

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

Bur 6-45950

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November, 2001

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RADIATOR

Removal

NOTE: *Put caps on all fittings and plugs in all disconnected hoses.*

STEP 1

Park the machine on a level surface. Remove the bucket or attachment from the loader arms. Raise the loader arms and lock the loader arms into the raised position.

STEP 2

Turn the ignition switch and the master disconnect switch (if equipped) to the OFF position.

STEP 3

Disconnect the negative battery cable from the battery.

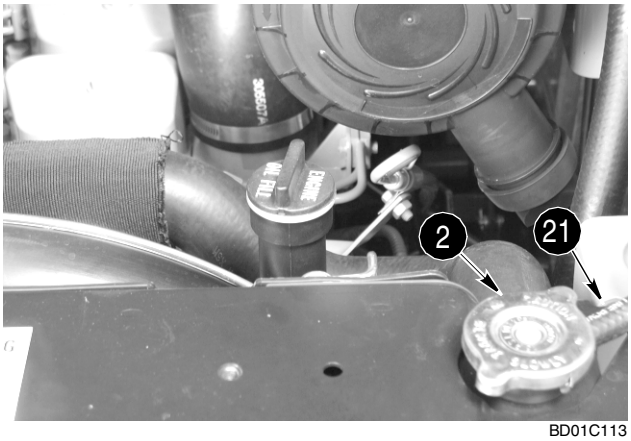
STEP 4

Tilt the cab forward.

STEP 5

Open the hood and rear access door on the machine.

STEP 6

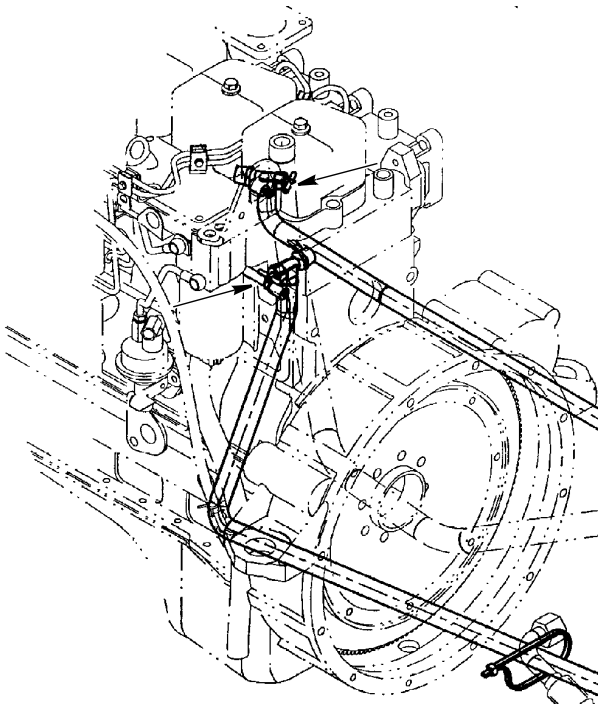


BD01C113

Let unite cool then slowly loosen the radiator cap (2). Disconnect the overflow hose (21) from the radiator neck.

NOTE: *Refer to illustration on page 5.*

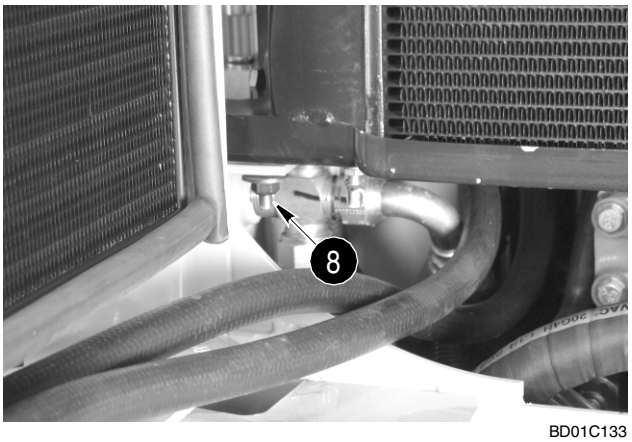
STEP 7



BS01F166

If equipped with a heater, open the heater coolant valves on the engine.

STEP 8



BD01C133

Install a hose on the drain valve (8) and drain the radiator (1) into a clean container that holds approximately 17 litres (4.5 gallons).

NOTE: *Refer to illustration on page 5.*

STEP 9

If equipped with a heater, close the heater coolant valves on the engine.

STEP 10

Loosen the clamps (4) on the lower radiator hose (5) and clamps (3) on the upper radiator hose (6).

NOTE: *Refer to illustration on page 5.*

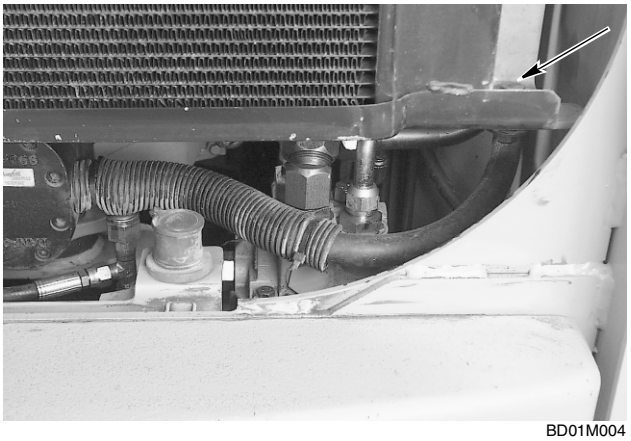
STEP 11

Remove the three bolts (25), washers (26), and nuts (29) that fasten the fan guard (24) to the radiator (1). Remove the fan guard.

NOTE: *During assembly torque the bolts (25) 15 to 20 Nm (120 to 180 pound-inches).*

NOTE: *Refer to illustration on page 12.*

STEP 12



BD01M004

Loosen and remove the bolts (9), washers (10, 11, and 13), mounts (12), and nuts (14) that fasten the bottom of the radiator (1) to the frame.

NOTE: *During assembly torque the bolt (9) 30 to 36 Nm (265 to 319 pound-inches).*

STEP 13

BD01J077

Loosen and remove the bolts (15), washers (16, 17, and 19), mounts (18), and nuts (20) that fasten the right side and left side of the radiator (1) to the frame.

NOTE: *During assembly torque the bolts (15) 30 to 36 Nm (265 to 319 pound-inches).*

STEP 14

Move the radiator (1) away from the upper radiator hose (6) and lower radiator hose (5). Remove the radiator (1) from the machine.

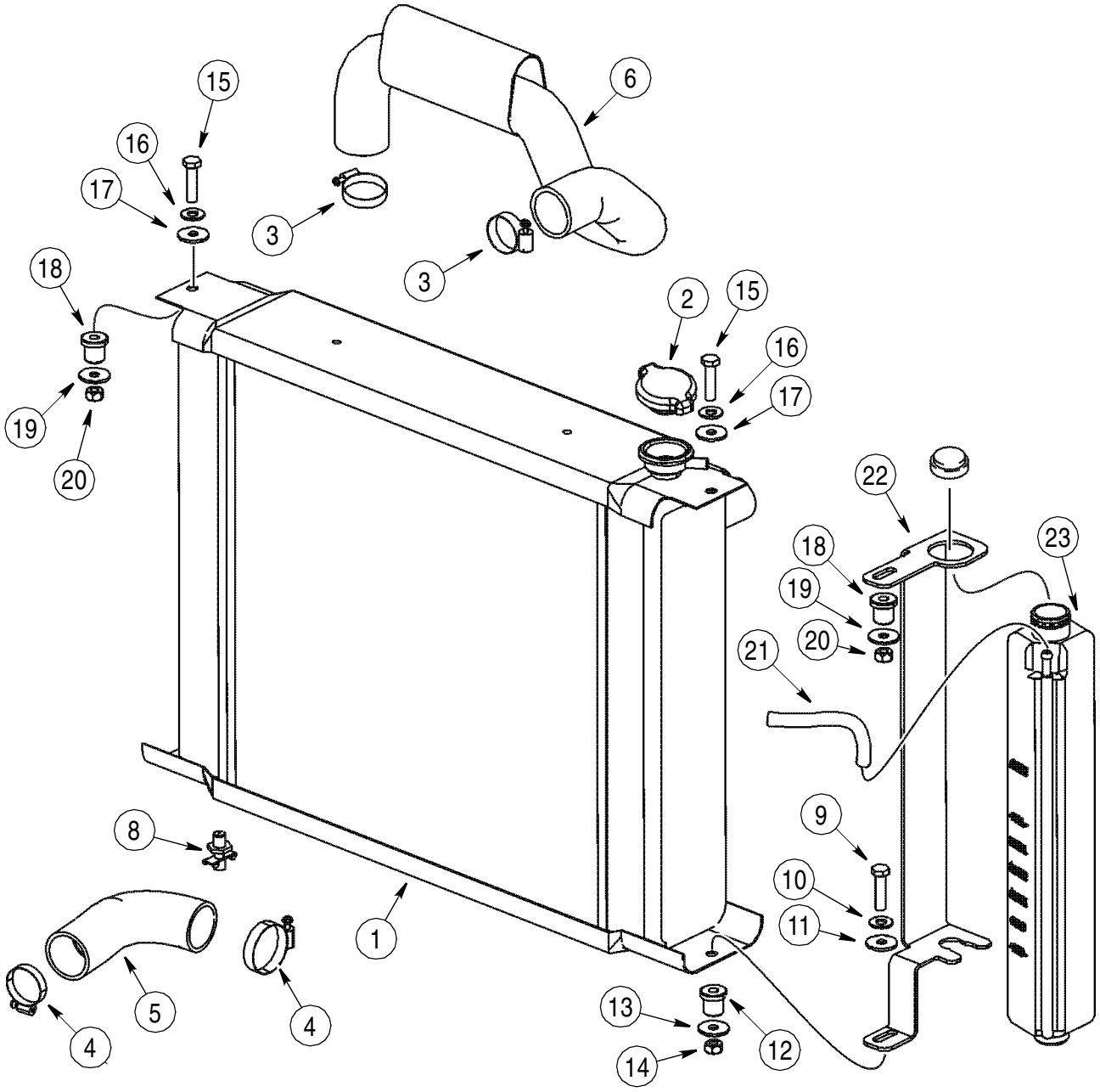
STEP 15

Remove the over flow bottle (23) and bracket (22).

Installation

STEP 16

Installation of the radiator is the revers of removal.



1. RADIATOR
2. RADIATOR CAP
3. HOSE CLAMP
4. HOSE CLAMP
5. LOWER RADIATOR HOSE
6. UPPER RADIATOR HOSE
7. HOSE HEAT GUARD
8. DRAIN VALVE
9. BOLT
10. WASHER
11. WASHER
12. MOUNT
13. WASHER
14. NUT
15. BOLT
16. WASHER
17. WASHER
18. MOUNT
19. WASHER
20. NUT
21. OVER FLOW HOSE
22. BRACKET
23. OVER FLOW BOTTLE

RADIATOR

ENGINE

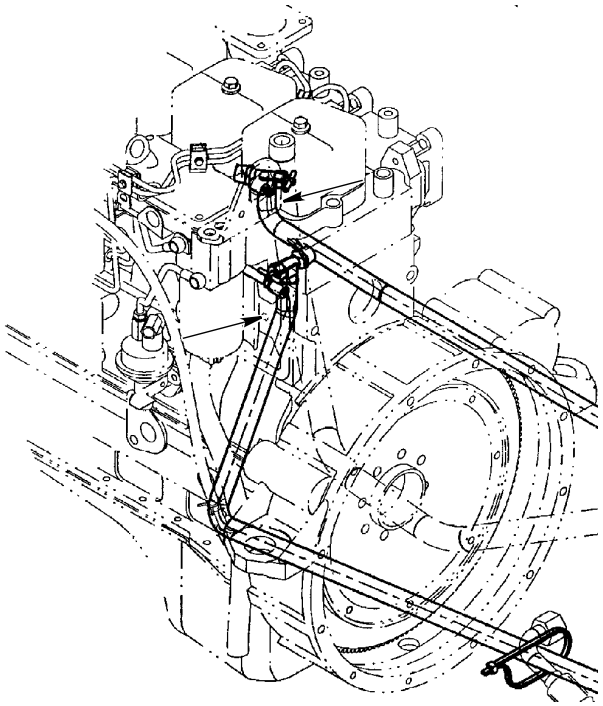
Removal

STEP 1
Remove the radiator from the machine.

STEP 2
Install plugs and caps on all disconnected hoses and fittings.

STEP 3
Tag all electrical connection for identification during assembly.

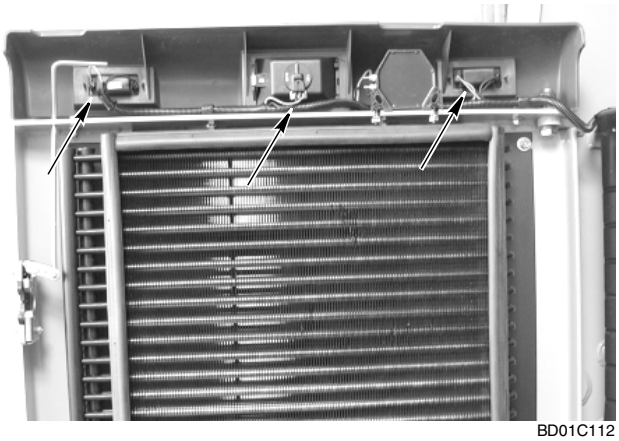
STEP 4



BS01F166

If equipped with a heater, disconnect the heater hoses.

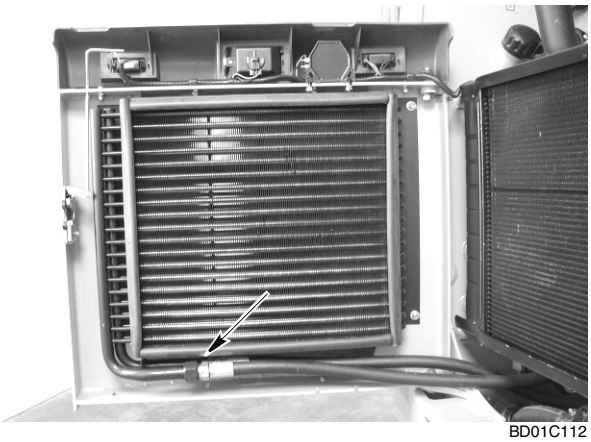
STEP 5



BD01C112

Disconnect the electrical connectors from the rear tail lamps on both sides and the rear work light on the rear access door. Put the electrical harness out of the way.

STEP 6



BD01C112

Tag and disconnect the hoses from the oil cooler on the rear access door.

STEP 7
Connect acceptable lifting equipment to the rear access door.

STEP 8

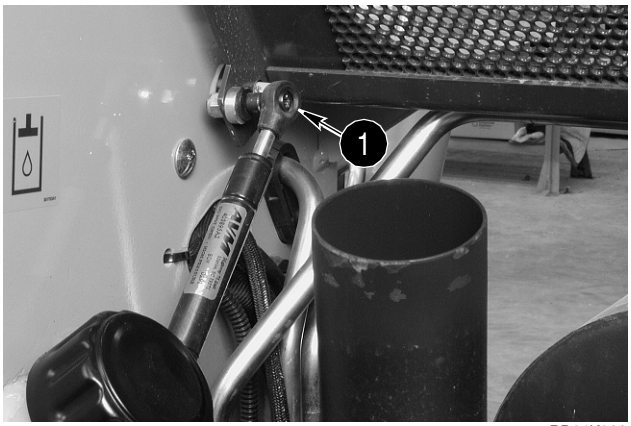
BD01C112

Loosen and remove the nut, spacer, bolt, and washer from the door.

STEP 9

Remove the door from the machine.

STEP 10

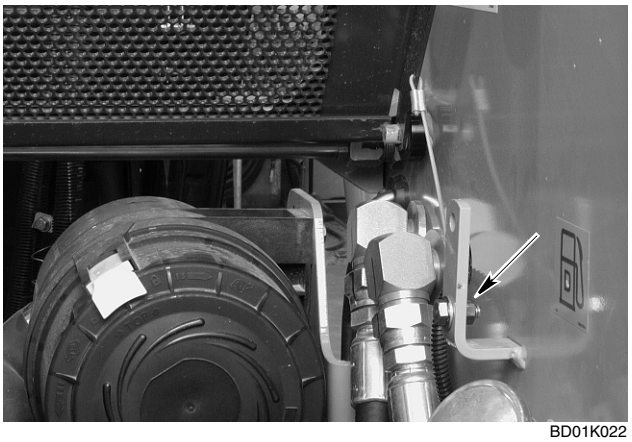


BD01K023

1. CYLINDER PIVOT BOLT

Remove the nut from cylinder pivot bolt (1) on the hood end of the cylinder.

STEP 11



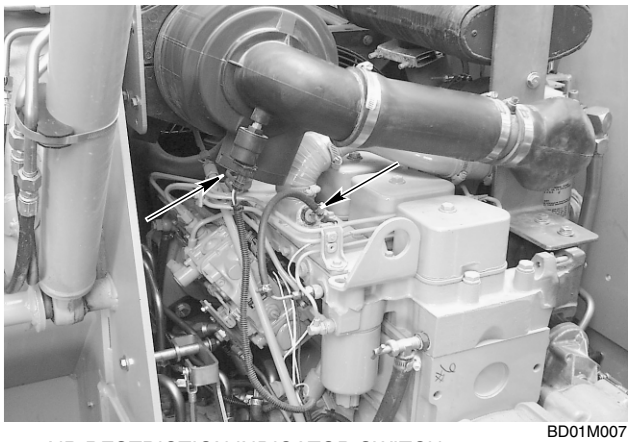
BD01K022

Remove the bolt, washer, and nut from the hood catch cable.

STEP 12

Push the hood to the right hand side of the machine and remove the left hand side of the hood from the pivot pin. Remove the hood from the machine.

STEP 13

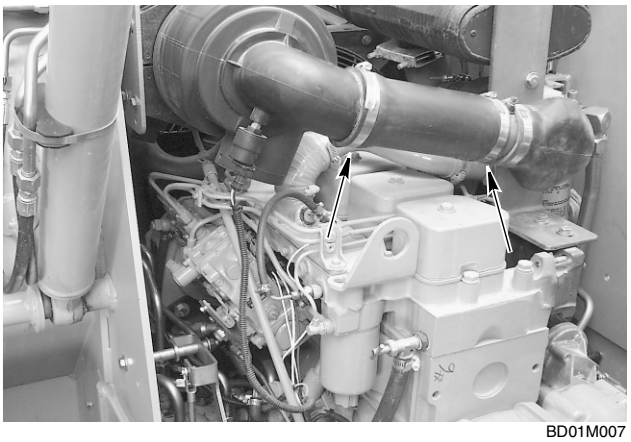


BD01M007

1. AIR RESTRICTION INDICATOR SWITCH
2. STARTING AID

Disconnect the electrical connector for the air restriction indicator switch (1) and starting aid switch (2).

STEP 14



BD01M007

Loosen the clamps (49) on the intake manifold hose (50). Remove the hose from the intake and air filter assembly (48).

NOTE: *Torque clamps (49) 3 to 4 Nm (25 to 35 pound-inches) during assembly.*

NOTE: *Refer to illustration on page 13.*

STEP 15

Loosen and remove the bolts (55), and washers (56) from the air filter clamp bracket (51).

STEP 16

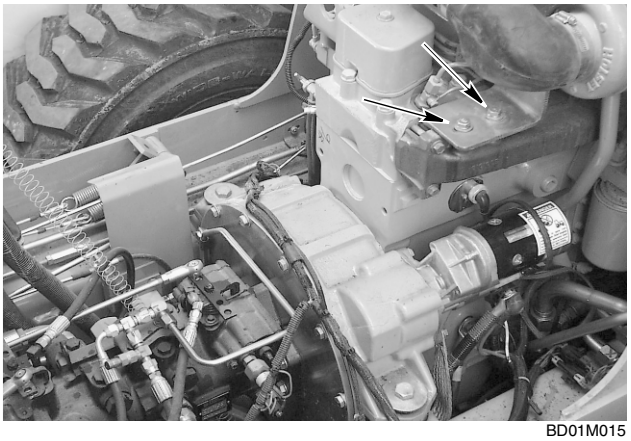
Remove the air filter (48) assembly, air filter clamp (52), and bracket (51) from the machine.

STEP 17

Remove the elbow (59) by loosing the clamp (58) on the engine intake side.

NOTE: *Refer to illustration on page 14.*

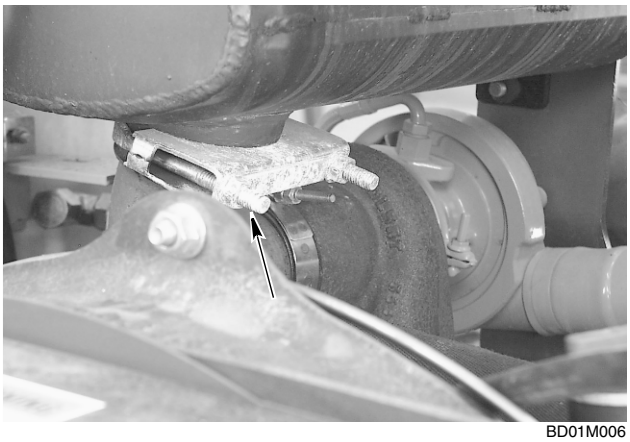
STEP 18



BD01M015

Loosen and remove the bolts (63), lock washer (64), and washer (65) from the bracket (62).

STEP 19



BD01M006

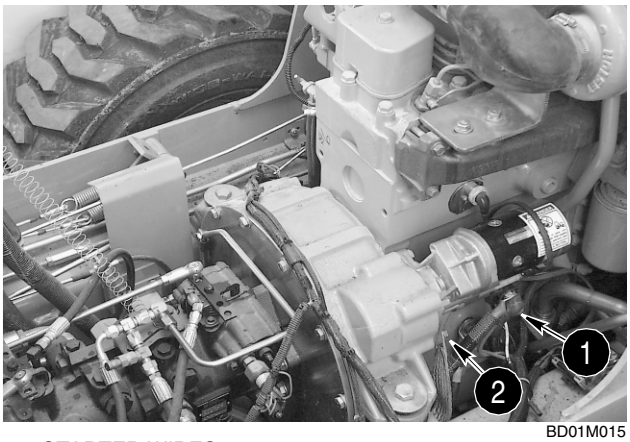
Loosen the exhaust clamp (76) and remove the muffler (61) from the exhaust outlet elbow (75).

STEP 20

Remove the bolts (27), washers (28), fan blade (30), and spacer (31) from the engine (38).

NOTE: *Refer to illustration on page 12.*

STEP 21



BD01M015

1. STARTER WIRES
2. GROUND STRAP

Disconnect the wires (1) from the starter solenoid.

STEP 22

Loosen and remove the starter mounting bolt and washer that holds the ground strap (2). Remove the ground strap from the bolt. Install the washer and starter mounting bolt.

STEP 23

Remove the bolt and wire harness clamp from the LH side of the engine.

STEP 24

Find the ground wires on the left hand side of the engine. Loosen and remove the bolts that fastens the ground wires to the engine. Keep all ground wires together.

STEP 25

BD01K021

Disconnect the wires from the alternator.

STEP 26

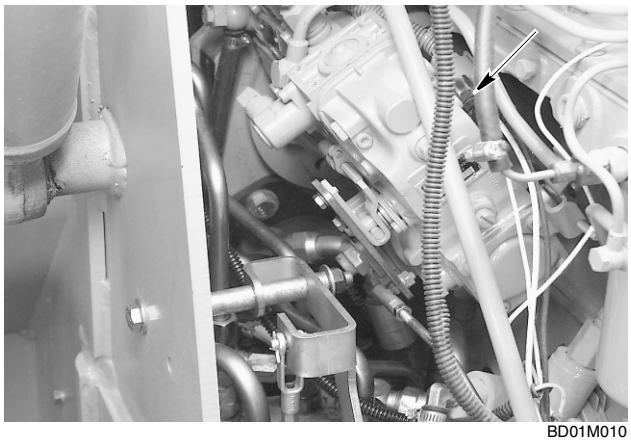
Loosen and remove the nut (33) that fastens the throttle linkage (32) to the fuel injection pump and throttle handle (34).

NOTE: *Refer to illustration on page 12.*

STEP 27

Disconnect the wire for the engine temperature switch. Cut the tie strap holding it to the engine and move out of the way.

STEP 28



BD01M010

Disconnect the wire connector for the fuel injection pump solenoid.

STEP 29

Loosen and remove the bolts that fasten the wire harness to the right side of the machine.

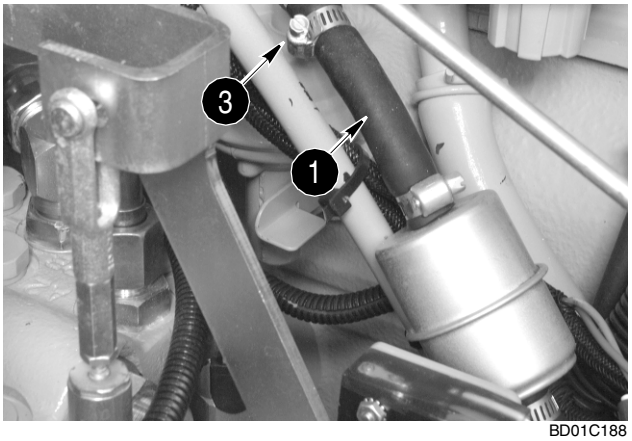
STEP 30

Move the wiring harness out of the way.

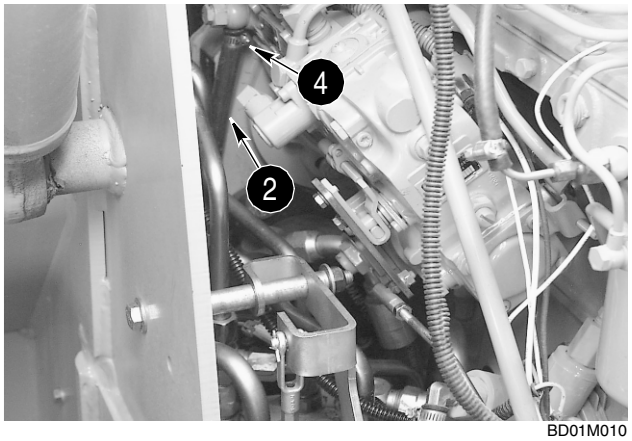
STEP 31

Close the fuel feed line valve.

STEP 32



BD01C188



BD01M010

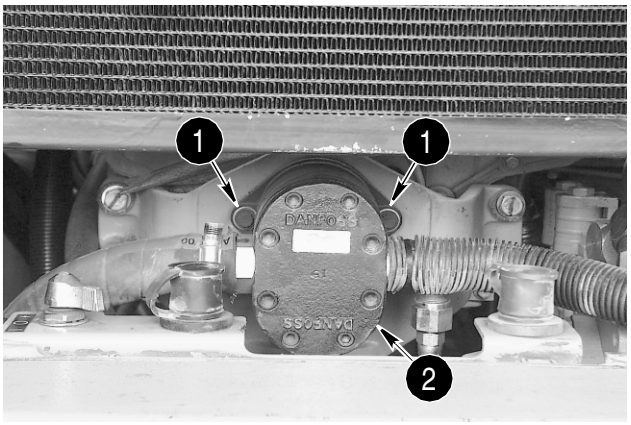
1. FUEL FEED LINE
2. FUEL RETURN LINE
3. CLAMP
4. CLAMP

Loosen the hose clamp (3) and disconnect the fuel line (1) from the fitting. Disconnect the fuel return line (2) from the engine by loosening the clamp (4) and removing the hose from the fitting.

STEP 33

Tag and disconnect all electrical connectors for the control valve. Cut the tie straps holding the wire harness to the engine and move the harness out of the way.

STEP 34



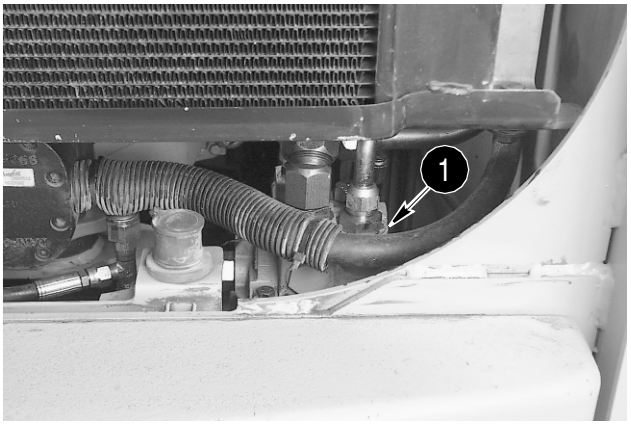
BD01M003

1. BOLT
2. PUMP

Loosen and remove the bolts (1) that fasten the gear pump (2) to the engine. Move the gear pump out of the way.

NOTE: *During assembly apply anti-seize to the splined shaft.*

STEP 35



BD01M004

1. HIGH FLOW CONTROL VALVE

Loosen and remove the bolts, washers and self-locking nuts. Move the high flow control valve (1) toward the rear of the machine and out of the way.

STEP 36

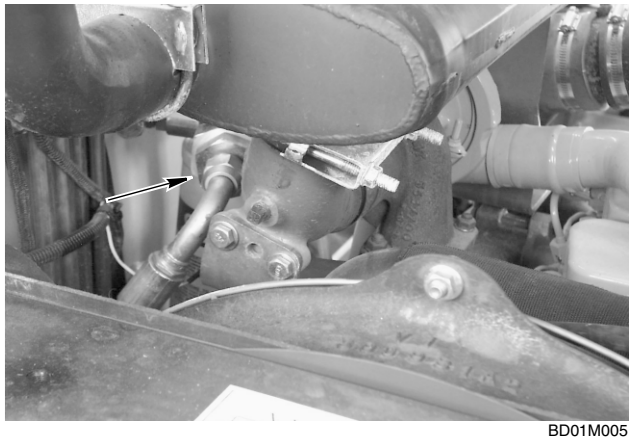
Disconnect the hoses from the high flow pump.

STEP 37

BD01K021

Remove the tube from the hydraulic oil filter.

STEP 38



BD01M005

Remove the hose from the hydraulic oil filter.

STEP 39

Remove the hydraulic oil filter. Remove the bolts and hydraulic oil filter bracket from the machine.

STEP 40

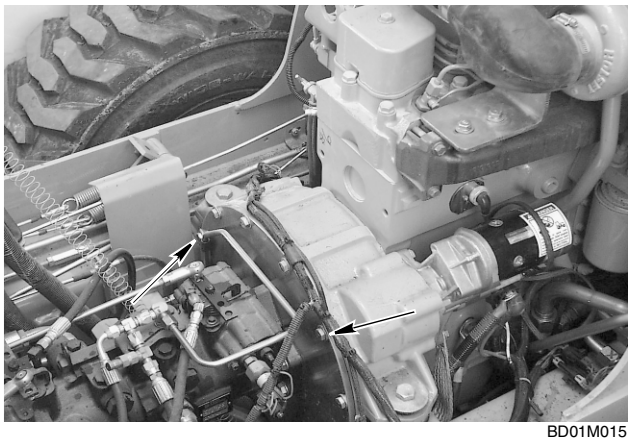
BD01M017

Disconnect the hydraulic lines shown from the left side of the tandem pump.

STEP 41

Connect equipment to the tandem pump that will hold the tandem pump in position when the engine is removed.

STEP 42

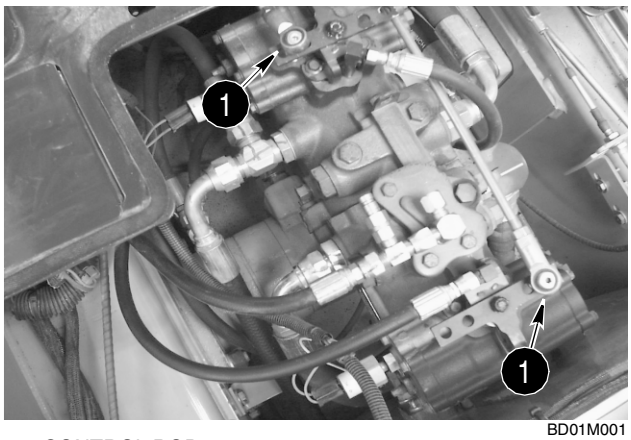


BD01M015

Loosen and remove the bolt (36) and washer (37) that fastens the wiring harness clamp and tube clamp to the tandem pump mounting plate (35). Move the wiring harness and tube out of the way.

NOTE: *Refer to illustration on page 12.*

STEP 43



BD01M001

1. CONTROL ROD

Disconnect the control rods (1) from the tandem pump by removing the nut from the rod end.

STEP 44

Remove the bolts and washers that fasten the tandem pump to the mounting plate (35) on the engine (38).

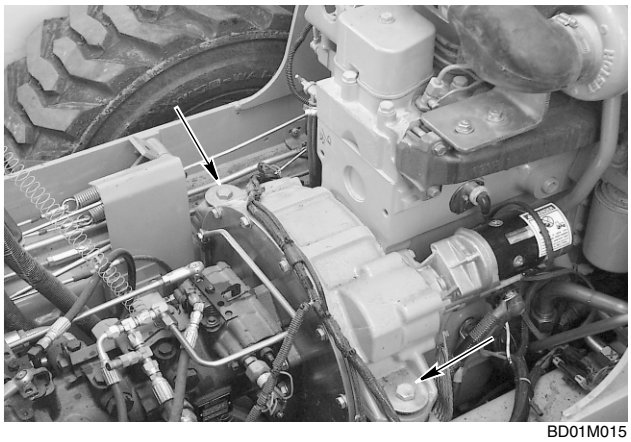
NOTE: *During assembly torque the bolts 39 to 47 Nm (345 to 416 pound-inches).*

NOTE: *Refer to illustration on page 12.*

STEP 45

Connect acceptable lifting equipment to the engine lifting eyes (47).

STEP 46



BD01M015

Remove the bolts (39), washers (40 and 42), spacer (41), and nut (43) from the engine mounts.

NOTE: *Torque the bolts 183 to 224 Nm (135 to 165 pound-feet) during assembly.*

STEP 47

Remove the bolt (44), washer (45), and spacer (46) from the engine front mount.

NOTE: *Torque the bolts 183 to 224 Nm (135 to 165 pound-feet) during assembly.*

STEP 48

Move the engine away from the tandem pump mounting plate until the splined shaft on the tandem pump disengages the coupling.

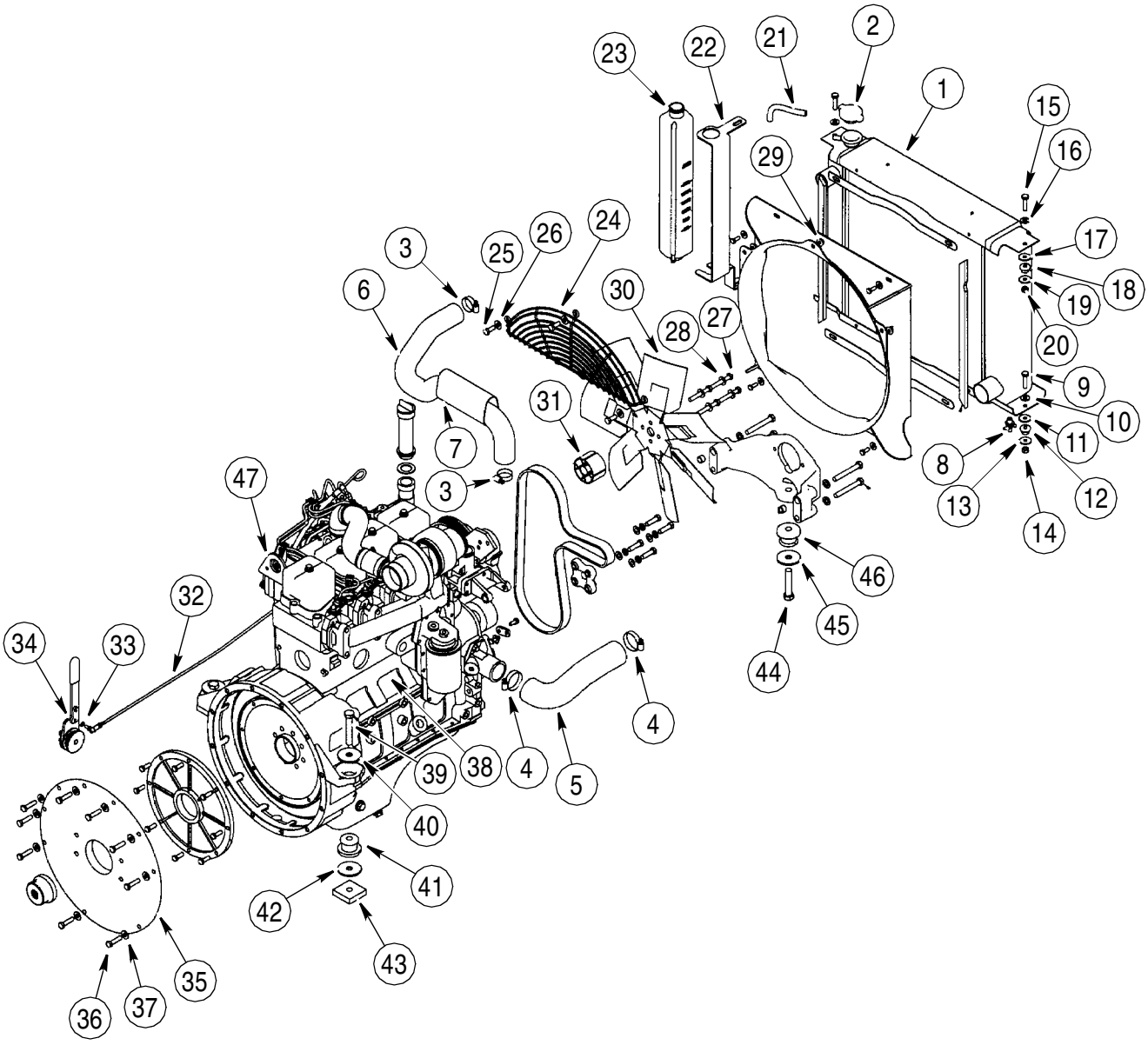
STEP 49

Remove the engine (38) from the machine.

Installation

STEP 50

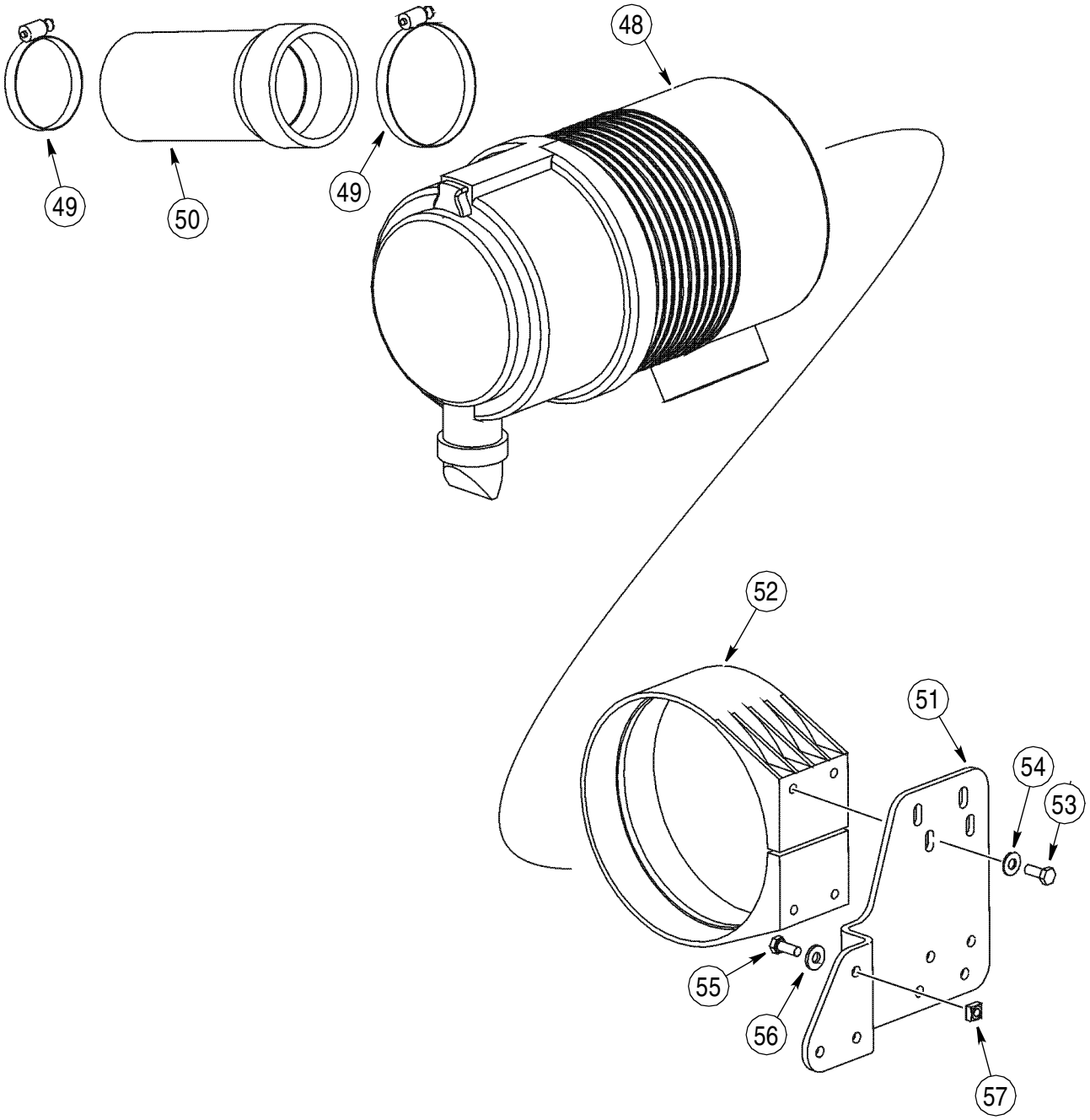
Installation of the engine is the reverse of removal.



BS01M039

1. RADIATOR
2. RADIATOR CAP
3. HOSE CLAMP
4. HOSE CLAMP
5. LOWER RADIATOR HOSE
6. UPPER RADIATOR HOSE
7. HOSE HEAT GUARD
8. DRAIN VALVE
9. BOLT
10. WASHER
11. WASHER
12. MOUNT
13. WASHER
14. NUT
15. BOLT
16. WASHER
17. WASHER
18. MOUNT
19. WASHER
20. NUT
21. OVER FLOW HOSE
22. BRACKET
23. OVER FLOW BOTTLE
24. FAN GUARD
25. BOLT
26. WASHER
27. BOLT
28. WASHER
29. NUT
30. FAN
31. SPACER
32. THROTTLE ROD
33. NUT
34. THROTTLE HANDLE
35. PUMP MOUNT PLATE
36. BOLT
37. WASHER
38. ENGINE
39. BOLT
40. WASHER
41. MOUNT
42. WASHER
43. NUT
44. BOLT
45. WASHER
46. MOUNT
47. LIFTING EYE

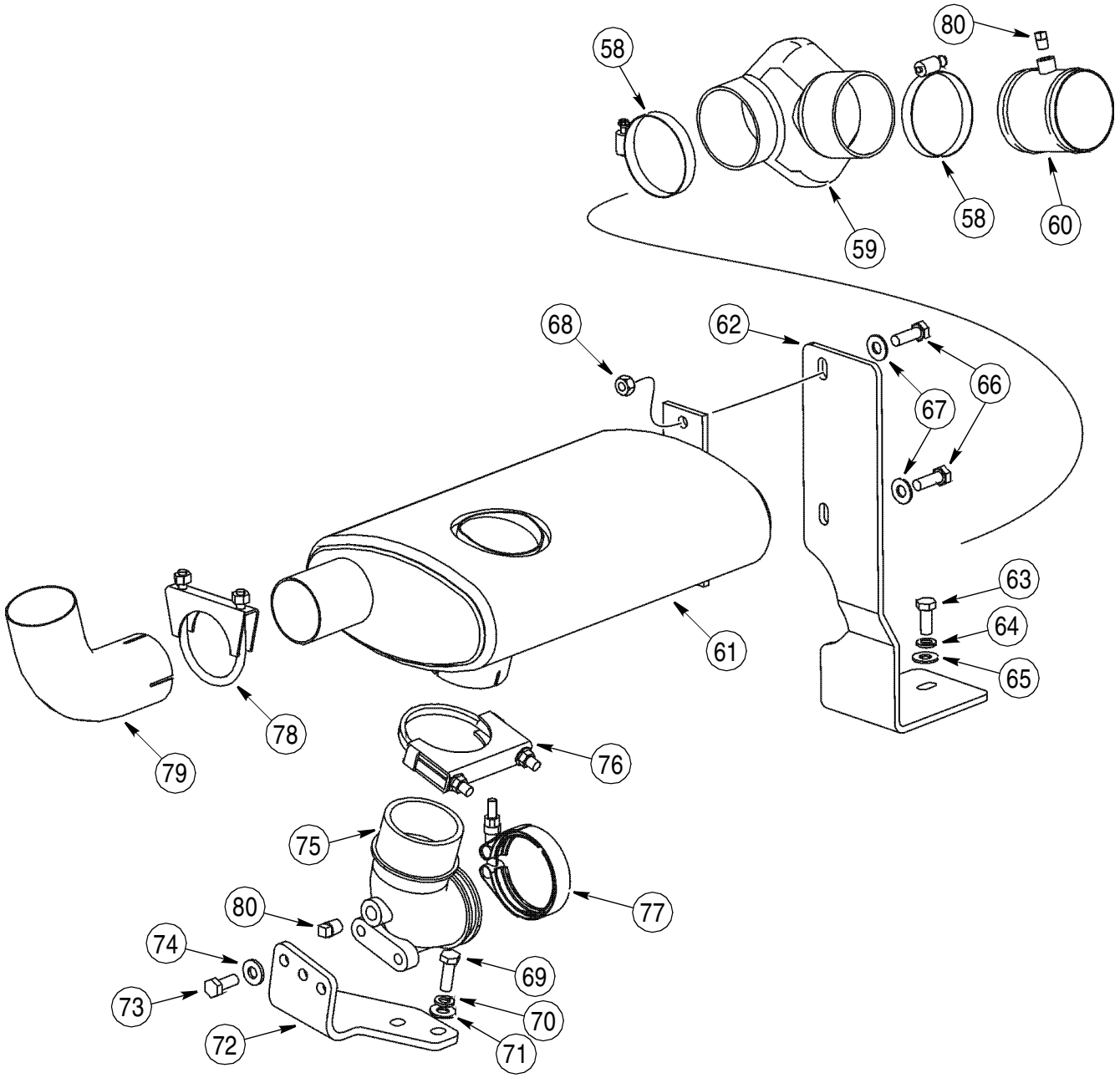
ENGINE MOUNTING



BS01M037

48. AIR FILTER HOUSING
49. HOSE CLAMP
50. INTAKE HOSE
51. BRACKET
52. HOUSING CLAMP
53. BOLT
54. WASHER
55. BOLT
56. WASHER
57. NUT

AIR FILTER ASSEMBLY



BS01M038

58. CLAMP
59. ELBOW
60. COUPLING
61. MUFFLER
62. FRONT BRACKET
63. BOLT
64. LOCK WASHER
65. WASHER
66. BOLT
67. WASHER
68. NUT
69. BOLT
70. LOCK WASHER
71. WASHER
72. BRACKET
73. BOLT
74. WASHER
75. EXHAUST OUTLET ELBOW
76. CLAMP
77. CLAMP
78. CLAMP
79. EXHAUST PIPE
80. PLUG

MUFFLER ASSEMBLY