"L" Series 2 Loader Backhoe Family
Service Manual
7-10402

Table of Contents

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

CASE CANADA CORPORATION
3350 SOUTH SERVICE ROAD
BURLINGTON, ON L7N 3M6 CANADA

Reprinted

Bur 7-11972

Printed in U.S.A.
Issued March, 1999 (Revised March, 2000)

“L” Series 2 Loader Backhoe Family
Service Manual
7-10402

Table of Contents

Bur 7-11972 Revised 3-00 Printed in U.S.A.

"L" Series 2 Loader Backhoe Family
Service Manual
7-10402

Table of Contents

NOTE: Case 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.

Bur 7-11972 Revised 3-00 Printed in U.S.A.

SECTION INDEX - GENERAL

Section Title	Section Number
Standard Torque Specifications	1001
Fluid and Lubricants	1002
Loctite Product Chart	

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

CASE CANADA CORPORATION
450 Sherman Avenue
Hamilton, ON L8N 4C4 CANADA

Bur 7-11981

Printed in U.S.A.
March, 1999

Section

1001

STANDARD TORQUE SPECIFICATIONS

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

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

Rac 8-71601

Printed in U.S.A.
Issued November, 1991

TABLE OF CONTENTS

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.*

Retyped November,

Rac 8-71601 Issued 11-91 Printed in U.S.A

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-Inches	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-Inches	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-Inches	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-Inches	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			

NOTE: Case 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.

Section 1002

FLUIDS AND LUBRICANTS

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

CASE CANADA CORPORATION
3350 SOUTH SERVICE ROAD
BURLINGTON, ON L7N 3M6 CANADA

Bur 7-54921

Printed in U.S.A.
December, 1998

TABLE OF CONTENTS

CONVERSION FORMULAS

Imperial quart = litres x 0.879877

Imperial gallon = litres x 0.219969

CAPACITIES AND LUBRICANTS

Engine Oil
- Capacity with Filter Change ..... 11 litres (11.6 U.S. quarts)
- Type of oil ..... See Engine Oil Recommendations on page 4

Engine Cooling System
- Capacity without heater ..... 15.8 litres (16.7 U.S. quarts)
- Capacity with heater ..... 16.5 litres (17.4 U.S. quarts)
- Type of coolant ..... Ethylene glycol and water mixed for the lowest ambient temperature At least 50/50 mix

Fuel Tank - 580L and 580 Super L
- Usable Capacity ..... 119 litres (31.4 U.S. gallons)

Fuel Tank - 590 Super L
- Usable Capacity ..... 159 litres (42 U.S. gallons)
- Type of fuel ..... See diesel fuel specifications on page 5

Hydraulic System
- Hydraulic reservoir refill capacity with filter change ..... 55 litres (14.5 U.S. gallons)
- Hydraulic reservoir refill capacity without filter change ..... 53 litres (14 U.S. gallons)
- Type of oil ..... Case TCH Fluid

Transmission, Standard
- 2 Wheel Drive
  - Total System ..... 18.5 litres (19.5 U.S. quarts)
  - Refill with or without filter ..... 16 litres (16.9 U.S. quarts)
  - Type of oil ..... Case Hy Tran Plus® (MS1207)
- 4 Wheel Drive
  - Total System ..... 20.8 litres (22 U.S. quarts)
  - Refill with or without filter ..... 18.5 litres (19.5 U.S. quarts)
  - Type of oil ..... Case Hy Tran Plus® (MS1207)

Transmission, Power Shift - 580 Super L and 590 Super L
- 4 Wheel Drive
  - Total System ..... 21 litres (22 U.S. quarts)
  - Refill with or without filter ..... 18.5 litres (19.5 U.S. quarts)
  - Type of oil ..... Case MS 1214 Trans-XHD (Sold by Case Dealers)

Front Axle - Four Wheel Drive - 580L and 580 Super L
- Capacity of center bowl ..... 5.5 litres (5.8 U.S. quarts)
- Capacity of planetary (each) ..... 0.7 litres (0.75 U.S. quart)
- Type of oil ..... Case Hy-Tran Plus® (MS 1207)

Front Axle - Four Wheel Drive - 590 Super L
- Capacity of center bowl ..... 6.5 litres (6.9 U.S. quarts)
- Capacity of planetary (each) ..... 1.0 litres (1.05 U.S. quarts)
- Type of oil ..... Case Hy-Tran Plus® (MS 1207)

Rear Axle - 580L and 580 Super L
- Capacity of center bowl ..... 14.2 litres (15 U.S. quarts)
- Capacity of planetary (each) ..... 1.5 litres (1.6 U.S. quarts)
- Type of oil ..... Case Hy-Tran Plus® (MS 1207)

Rear Axle - 590 Super L
- Capacity of center bowl ..... 14.2 litres (15 U.S. quarts)
- Capacity of planetary (each) ..... 2.0 litres (2.1 U.S. quarts)
- Type of oil ..... Case Hy-Tran Plus® (MS 1207)

Brake Reservoir ..... (Gets fluid automatically from the hydraulic system)

ENGINE OIL RECOMMENDATIONS

Case IH No.1 Engine Oil is recommended for use in your Case IH Engine. Case IH No.1 Engine Oil will lubricate your engine correctly under all operating conditions. If Case IH No. 1 Multi-Viscosity Engine Oil is not available, Case IH No. 1 Single Grade Engine Oil can be used.

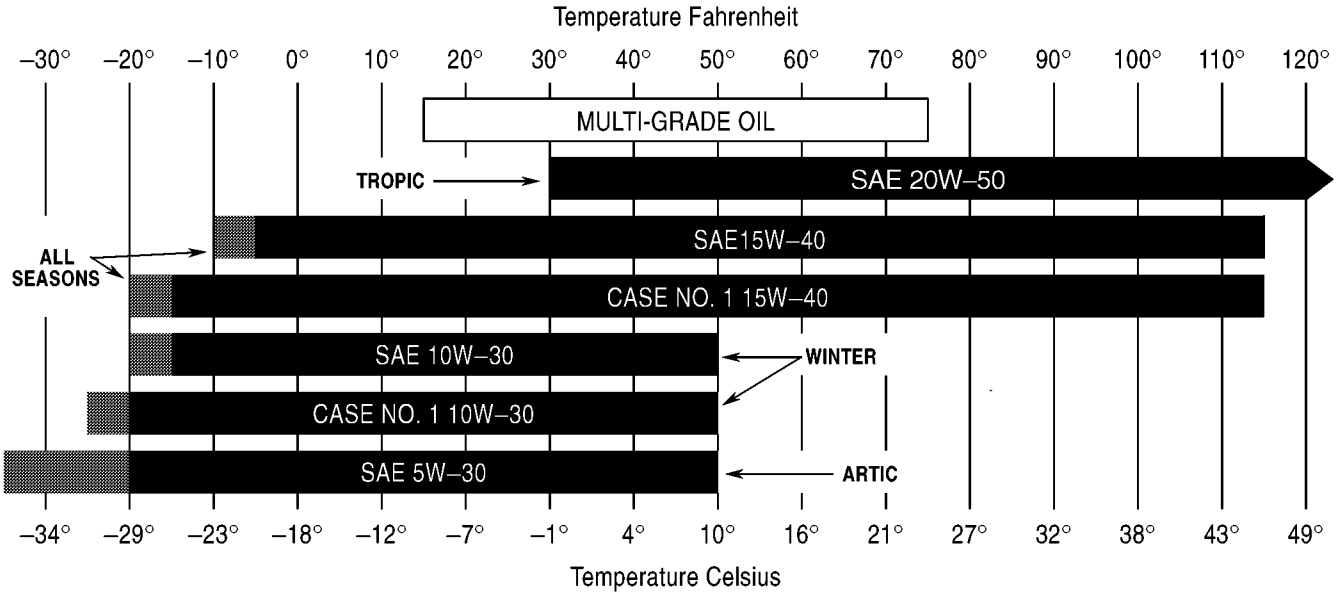
If Case IH No.1 Multi-Viscosity or Single Grade Engine Oil is not available, use only oil meeting API engine oil service category CE.

GM98N100

BP97H064

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 intervals given in this manual are according to tests with Case IH lubricants.*



Indicates use of an engine oil heater or a jacket water heater is required.

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 INDEX - ENGINE

Section Title

Section Number

For Engine Repair, See the Engine Service Manual

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

CASE CANADA CORPORATION
3350 SOUTH SERVICE ROAD
BURLINGTON, ON L7N 3M6 CANADA

Bur 7-11991

Printed in U.S.A.
March, 1999 (Revised March, 2000)

Section 2000

ENGINE AND RADIATOR REMOVAL AND INSTALLATION

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

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

Bur 7-49651

Printed in U.S.A.
Issued May, 1995 (Revised March, 2000)

TABLE OF CONTENTS

RADIATOR REMOVAL

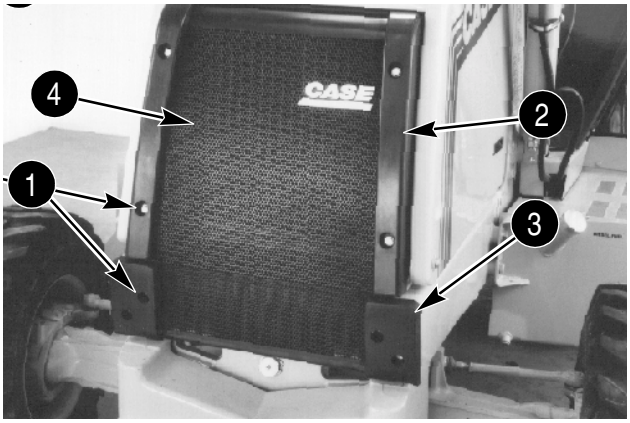
Put identification tags on all disconnected hoses and wires. Close disconnected hoses and fittings with caps and plugs.

STEP 1

BP9502285

Park the machine on a level surface. Raise the loader and lock the support strut (1) to hold the loader. Stop the engine and apply the parking brake.

STEP 2



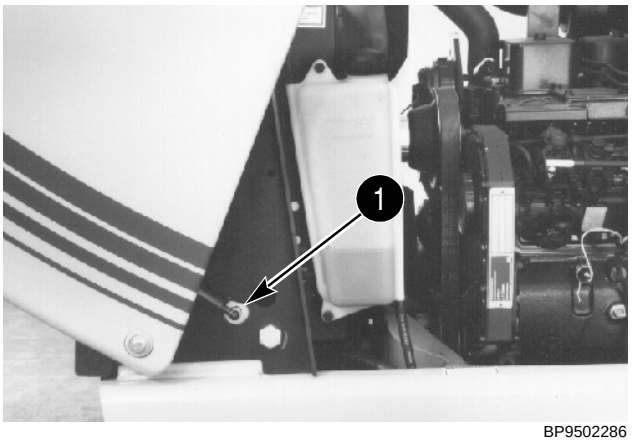
BP9502315

Remove the caps screws (1), upper (2) and lower bumpers (3), and the grille (4) from the front of the machine.

STEP 3

Remove the bolts, washers, and nuts from the pivot point on the hood.

STEP 4



BP9502286

Have another person help with the following procedure.

A. Open the hood.

B. Remove the retainers from the hood struts (1) and disconnect the hood struts from the stud.

C. Hold the hood in place and disconnect the hood cable from the radiator shroud on the other side of the machine.

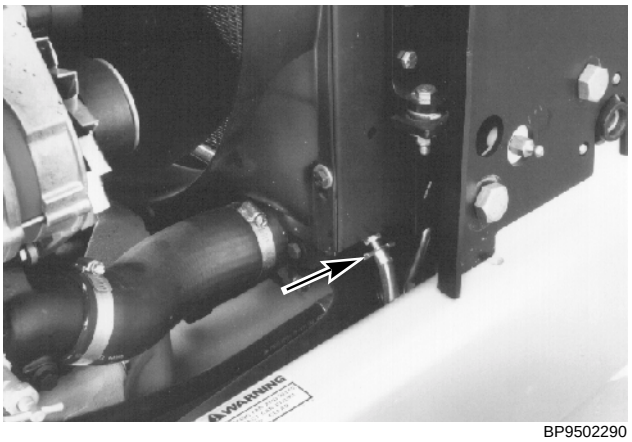
D. Carefully lower the hood back to the closed position.

STEP 5

BP9502288

Drive the pivot tubes out of the hood pivot point. Remove the hood from the machine.

STEP 6

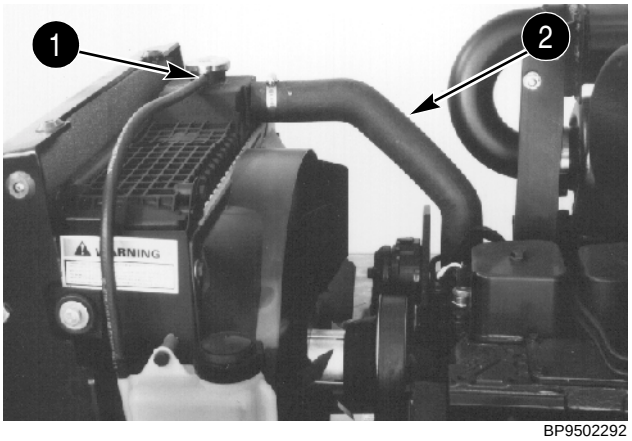


BP9502290

Slowly remove the radiator cap. Install a hose on the drain valve and drain the radiator into a clean container that holds approximately 17 litres (18 U.S. quarts).

NOTE: *During installation, fill the radiator and coolant reservoir completely. See Section 1002 for coolant 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 reservoir level. Add coolant as required.*

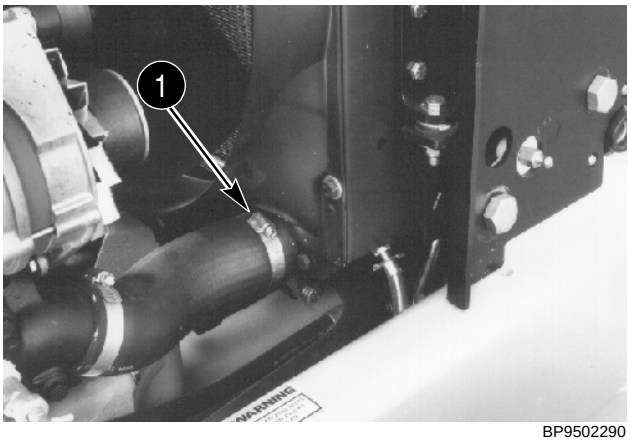
STEP 7



BP9502292

Disconnect the overflow hose (1) from the radiator neck. Loosen the clamp and disconnect the upper radiator hose (2).

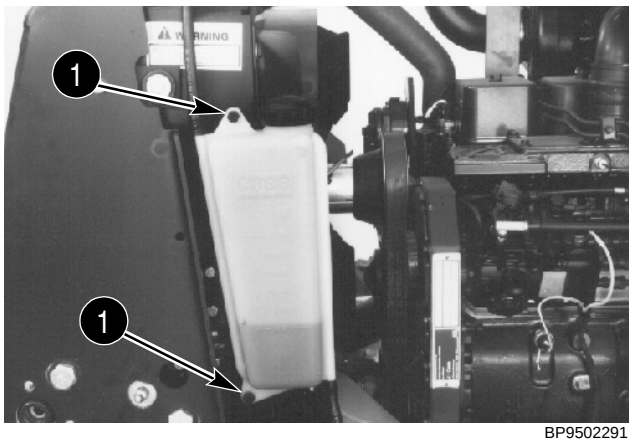
STEP 8



BP9502290

Loosen the clamp (1) and disconnect the lower radiator hose.

STEP 9

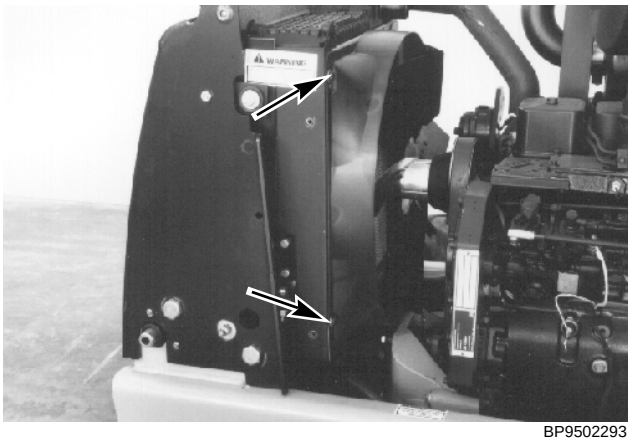


BP9502291

Remove the bolts (1), spacers, washers, and coolant reservoir from the machine.

NOTE: *During installation tighten the bolts to a torque of 5 to 6 Nm (45 to 55 pound-feet).*

STEP 10

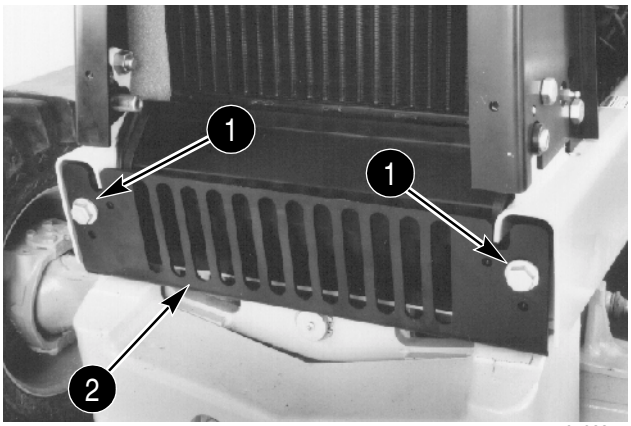


BP9502293

Remove the hardware from the fan shroud. Move the fan shroud away from the radiator.

NOTE: *During installation tighten the cap screws to a torque of 26 to 31 Nm (19 to 23 pound-feet).*

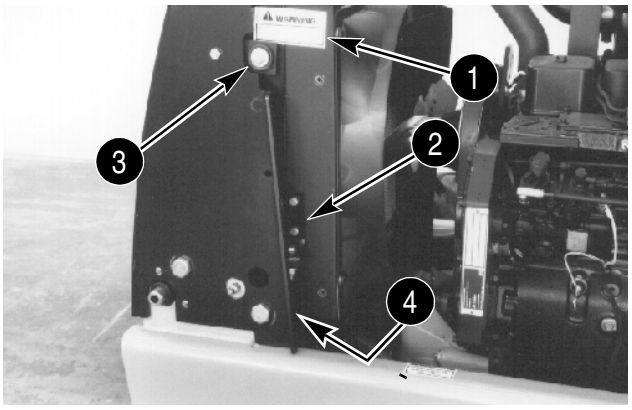
STEP 11



BP9502314

Remove the cap screws (1) and pump guard (2) from the machine.

STEP 12



BP9502293

Use a sharp knife and cut the warning decal (1). Remove the cap screws that fasten the lower brackets (2) to the radiator. Remove the hardware and the lower brackets (2) from the radiator shroud. Remove the cap screws and flat washers that fasten the upper brackets (3) to the radiator. Remove the cap screws and flat washers (4) that fastens the condenser if equipped and oil cooler to the radiator. Lift the radiator straight up and remove the radiator from the machine

NOTE: *Installation of the radiator is the reverse of removal.*

ENGINE REMOVAL

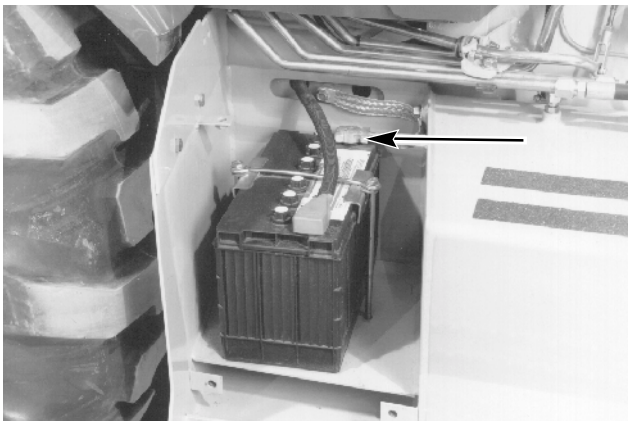
Put identification tags on all disconnected hoses and wires. Close disconnected hoses and fittings with caps and plugs.

STEP 1

BP9502285

Park the machine on a level surface. Raise the loader and lock the support strut to hold the loader.

STEP 2



BP9410097

Remove the battery cover from the right step. If the machine has only one battery, disconnect the negative battery cable from the battery.

STEP 3

B9410098

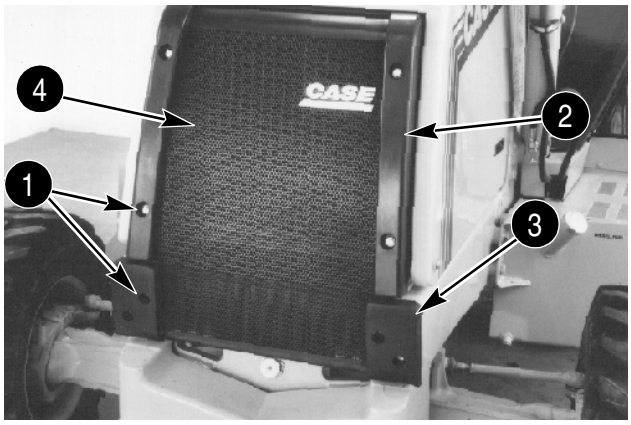
If the machine has two batteries, remove the terminal nut. Remove the negative battery cable from the terminal and move the negative battery cable away from the battery. Make sure the jumper cable is installed on the terminal and start the terminal nut onto the terminal.

STEP 4

Drain the oil from the hydraulic reservoir.

NOTE: *During installation fill the hydraulic reservoir with the oil specified in section 1002 of this manual.*

STEP 5



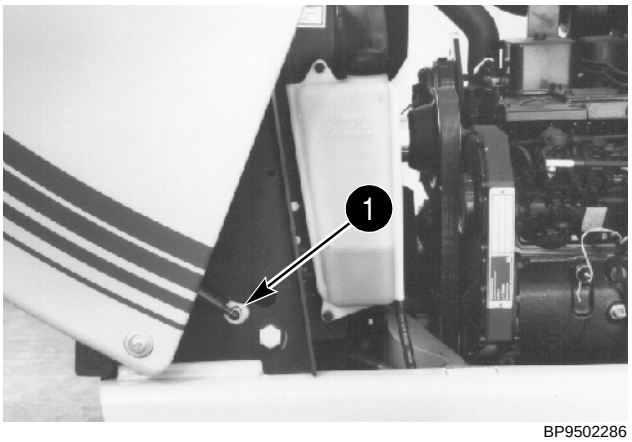
BP9502315

Remove the caps screws (1), upper (2) and lower bumpers (3), and the grille (4) from the front of the machine.

STEP 6

Remove the bolts, washers, and nuts from the pivot point on the hood.

STEP 7



BP9502286

Have another person help with the following procedure.

A. Open the hood.

B. Remove the retainers from the hood struts (1) and disconnect the hood struts from the stud.

C. Hold the hood in place and disconnect the hood cable from the radiator shroud on the other side of the machine.

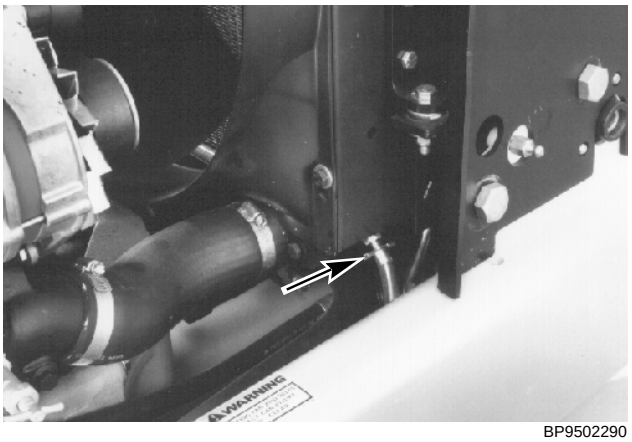
D. Carefully lower the hood back to the closed position.

STEP 8

BP9502288

Drive the pivot tubes out of the hood pivot point. Remove the hood from the machine.

STEP 9

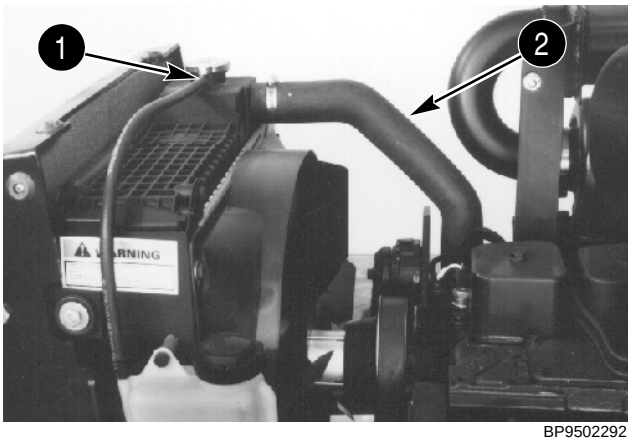


BP9502290

Slowly remove the radiator cap. Install a hose on the drain valve and drain the radiator into a clean container that holds approximately 17 litres (18 U.S. quarts).

NOTE: *During installation, fill the radiator and coolant reservoir completely with coolant. See Section 1002 for coolant 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 reservoir level. Add coolant as required.*

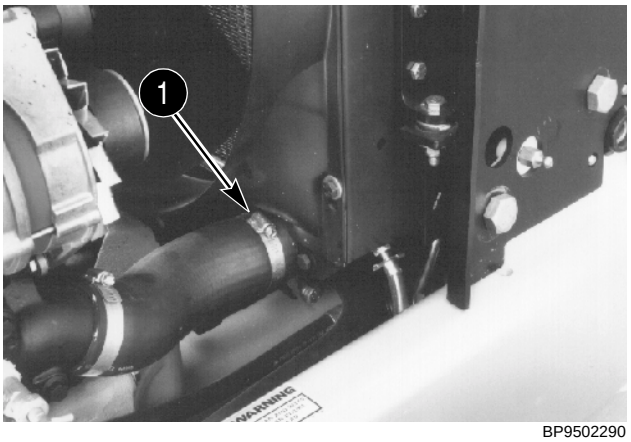
STEP 10



BP9502292

Disconnect the overflow hose (1) from the radiator neck. Loosen the clamp and disconnect the upper radiator hose (2).

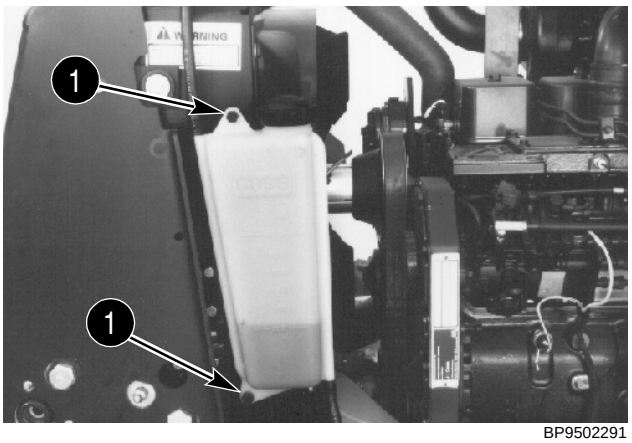
STEP 11



BP9502290

Loosen the clamp (1) and disconnect the lower radiator hose.

STEP 12

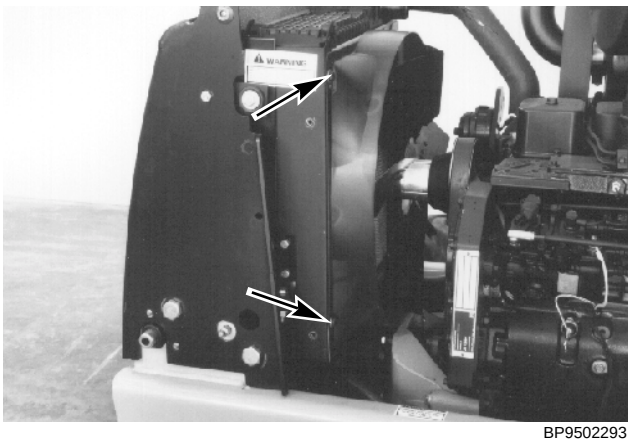


BP9502291

Remove the bolts (1), spacers, washers, and coolant reservoir from the machine.

NOTE: *During installation tighten the bolts to a torque of 5 to 6 Nm (45 to 55 pound-feet).*

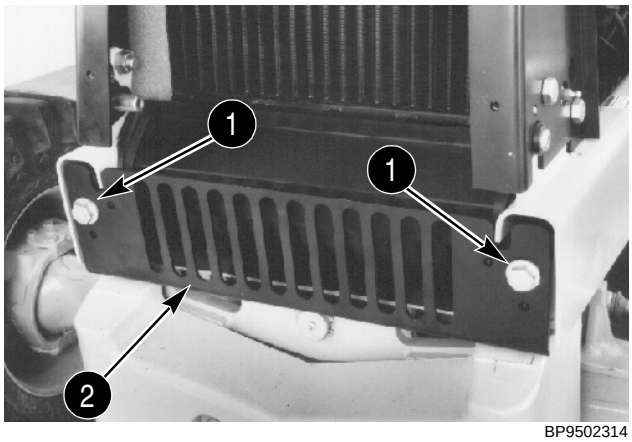
STEP 13



BP9502293

Remove the hardware from the fan shroud. Move the fan shroud away from the radiator.

STEP 14

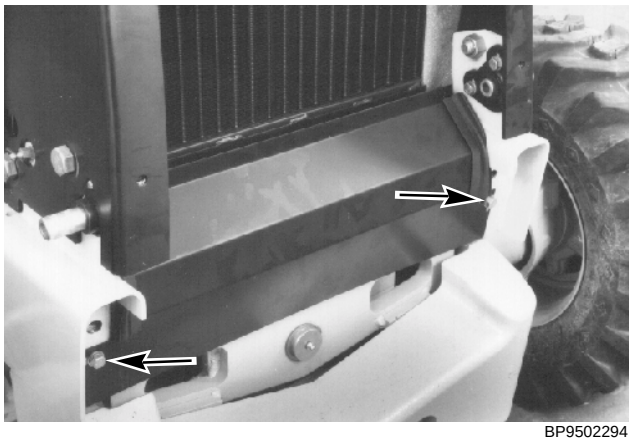


BP9502314

Remove the cap screws (1) and pump guard (2) from the machine.

NOTE: *If the machine is equipped with air conditioning and a baffle plate with a slot for the drier hose, go to step 24. If the machine is equipped with air conditioning and a baffle plate with out a slot for the drier hose, do steps 20 through 22 to keep from discharging the air conditioning system. For machines without air conditioning, do steps 15 through 19.*

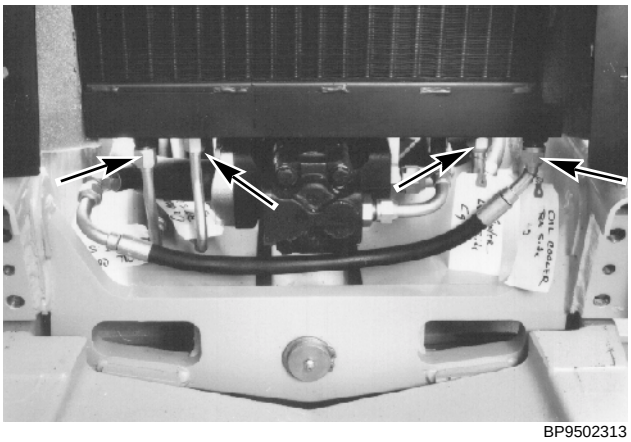
STEP 15



BP9502294

Loosen and remove the cap screws, flat washers, and if equipped, lock washers that fasten the baffle plate to the front of the machine.

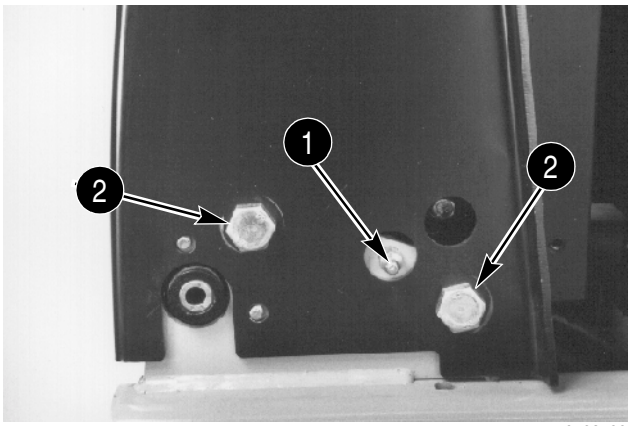
STEP 16



BP9502313

Disconnect the hoses from the oil cooler.

STEP 17



BP9503100

Remove the studs (1). Remove the bolts (2) and nuts that fasten the radiator shroud to the frame.

NOTE: *During installation tighten the studs (1) to a torque of 52 to 61 Nm (38 to 45 pound-feet). Tighten the bolts (2) to a torque of 434 to 515 Nm (320 to 380 pound-feet).*

STEP 18

Remove the radiator shroud, radiator, and oil cooler as an assembly.

STEP 19

Go to step 34.

NOTE: *Do steps 20 through 22 for machine with air conditioning and a baffle plate without a slot.*

STEP 20

Remove all straps that hold the hose for the air conditioning system drier from the front of the machine back to the cab. It is important to have as much hose as possible at the front of the machine to do the next step.

STEP 21

Loosen and remove the cap screws, flat washers, and if equipped, lock washers that fasten the baffle plate to the front of the machine.

STEP 22

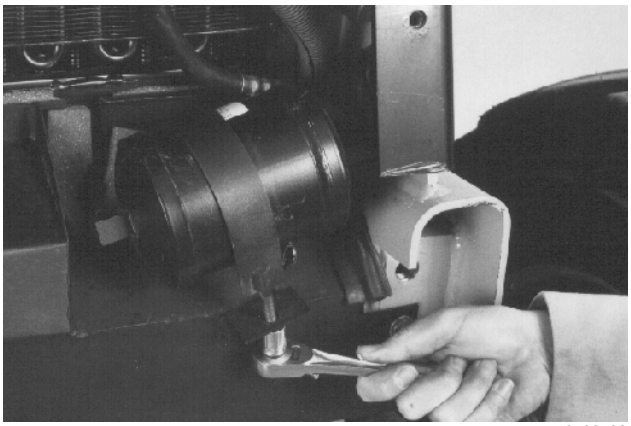
Move the baffle plate and drier for access to the hoses on the left side of the oil cooler.

STEP 23

Go to Step 27.

NOTE: *Do steps 24 and 25 for machines with air conditioning and a baffle plate with a slot.*

STEP 24

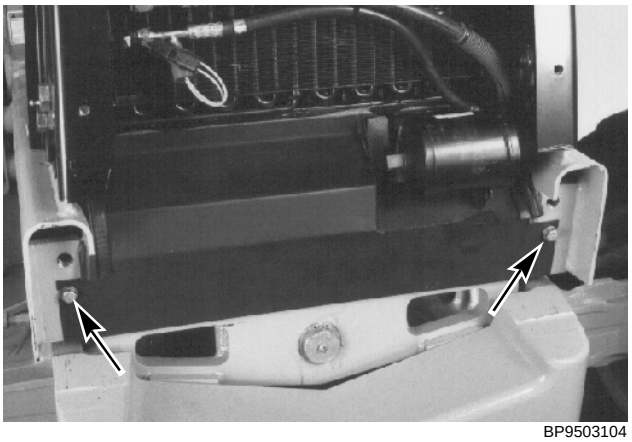


BP9503103

Remove the self-locking nut and clamp from the drier.

NOTE: *During installation tighten the self locking nut to a torque of 26 to 31 Nm (19 to 23 pound-feet).*

STEP 25



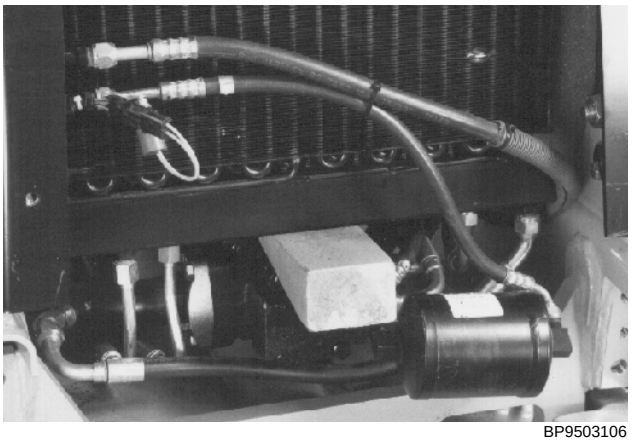
BP9503104

Remove the cap screws, flat washers, and if equipped, lock washers that fasten the baffle plate to the front of the machine. Remove the baffle plate from the drier and the machine.

NOTE: *During installation tighten the cap screws to a torque of 52 to 61 Nm (38 to 45 pound-feet).*

NOTE: *Do the remaining steps for all machines.*

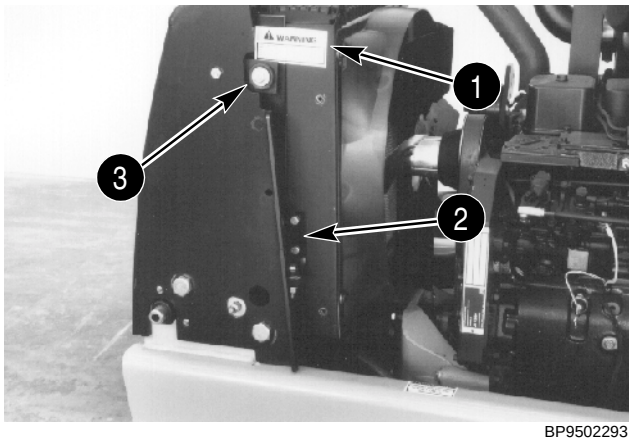
STEP 26



BP9503106

Put a block under the oil cooler to hold the radiator, oil cooler, and condenser in place when the radiator shroud is removed.

STEP 27

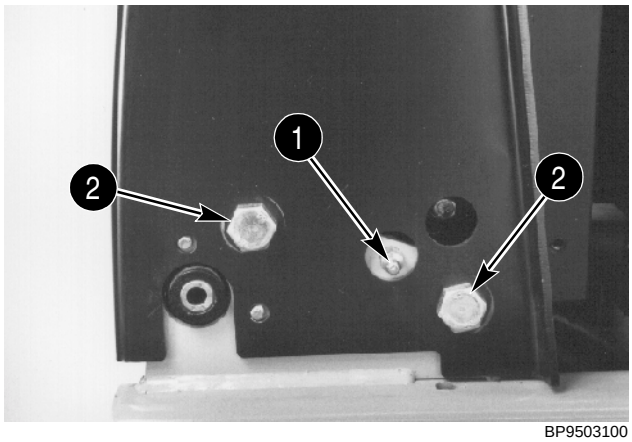


BP9502293

Use a sharp knife and cut the warning decal (1). Remove the cap screws that fasten the lower brackets (2) to the radiator. Remove the hardware and the lower brackets (2) from the radiator shroud. Remove the cap screws and flat washers that fasten the upper brackets (3) to the radiator.

NOTE: *During installation tighten the cap screws to a torque of 26 to 31 Nm (19 to 23 pound-feet).*

STEP 28



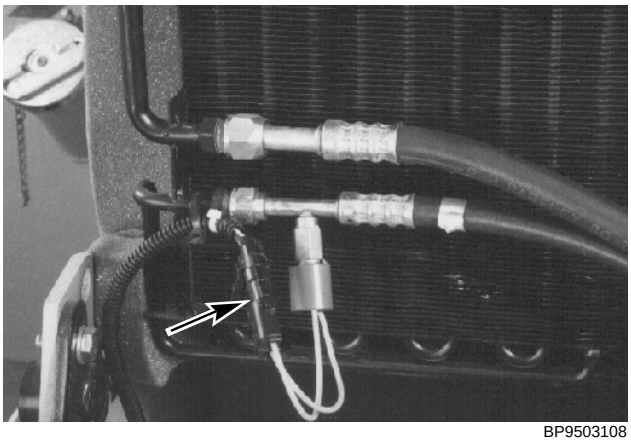
BP9503100

Remove the studs (1) from the frame. Remove the bolts and nuts (2) that fasten the radiator shroud to the frame.

STEP 29

Remove the radiator shroud from the radiator, oil cooler, and condenser.

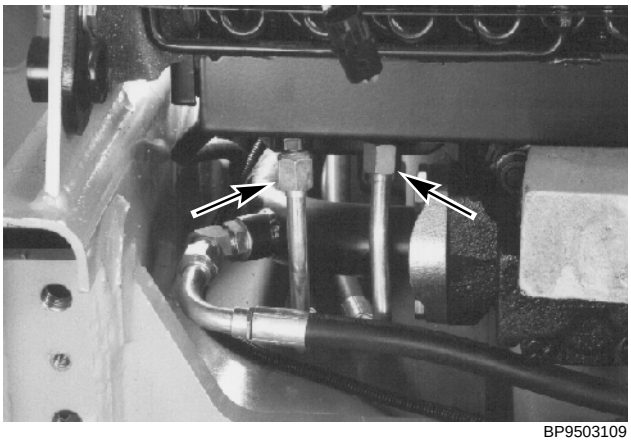
STEP 30



BP9503108

Disconnect the electrical connector for the drier.

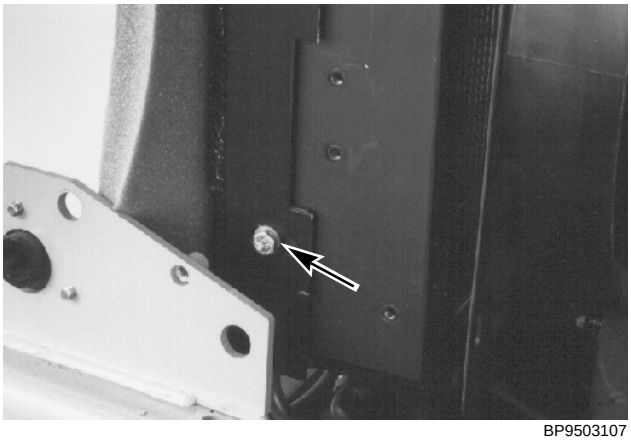
STEP 31



BP9503109

Disconnect the hoses from the oil cooler on both sides of the oil cooler.

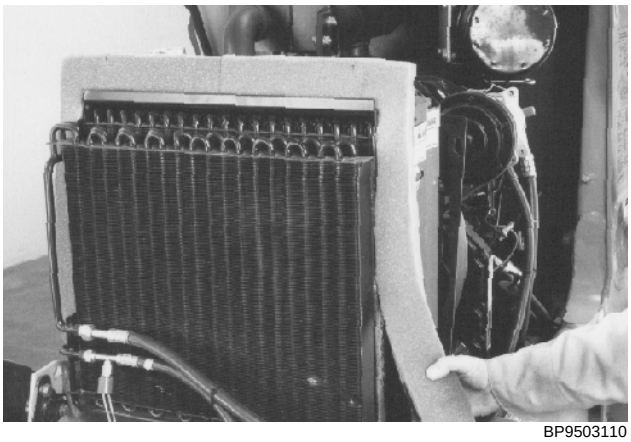
STEP 32



BP9503107

Remove the cap screws and flat washers that fasten the condenser and oil cooler to the radiator.

STEP 33



BP9503110

Pull the foam baffle away from the condenser.

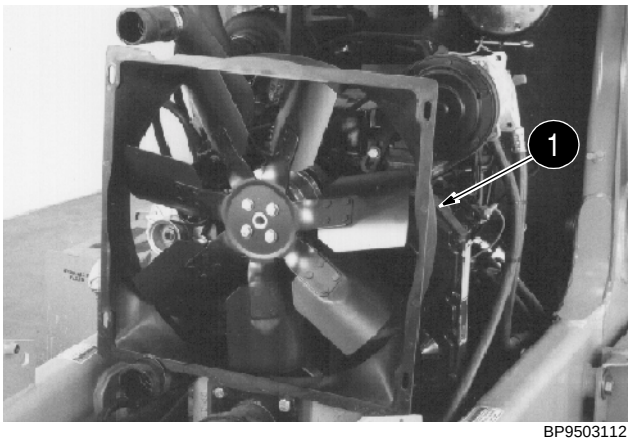
NOTE: *Apply adhesive to the baffle during the installation procedure before installing the baffle.*

STEP 34

BP9503111

For machines with a slot in the baffle plate, move the condenser and drier assembly out of the way as shown. For machines without a slot in the baffle plate, have another person help to move the condenser, baffle plate, and drier assembly away from the radiator and oil cooler assembly and fasten the assembly out of the way.

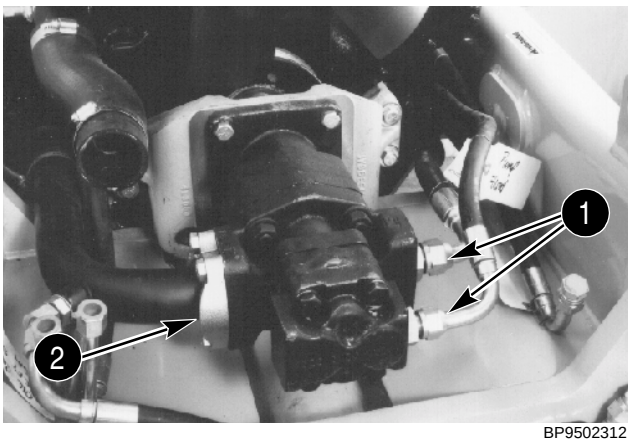
STEP 35



BP9503112

Remove the radiator and oil cooler. Remove the fan shroud (1) from the fan.

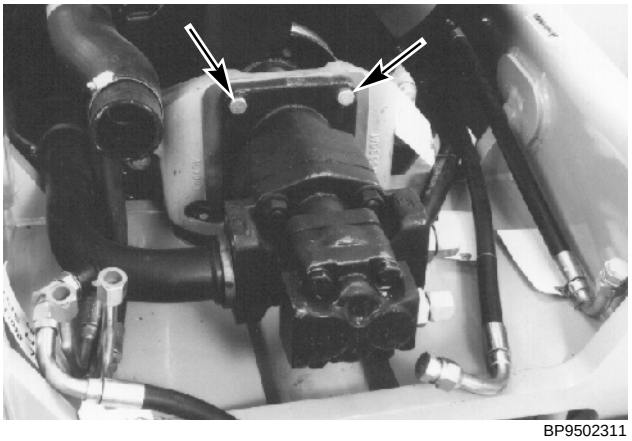
STEP 36



BP9502312

Disconnect the hoses (1) from the LH side of the pump. Remove the bolts and lock washers that fasten the flange (2) on the RH side of the pump.

STEP 37

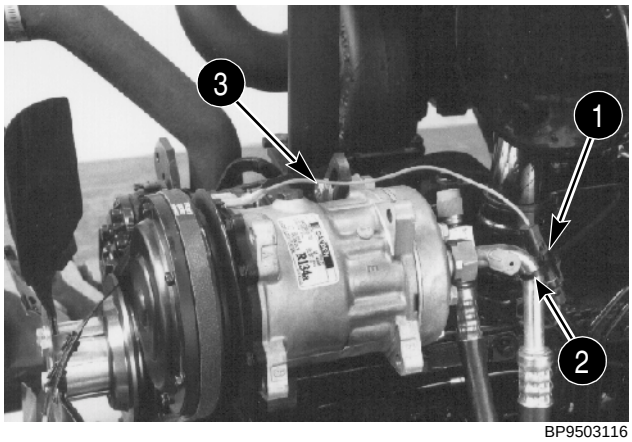


BP9502311

Loosen and remove the cap screws that fasten the pump to the pump mounting bracket.

NOTE: *Do steps 38 through 40 for machines with air conditioning.*

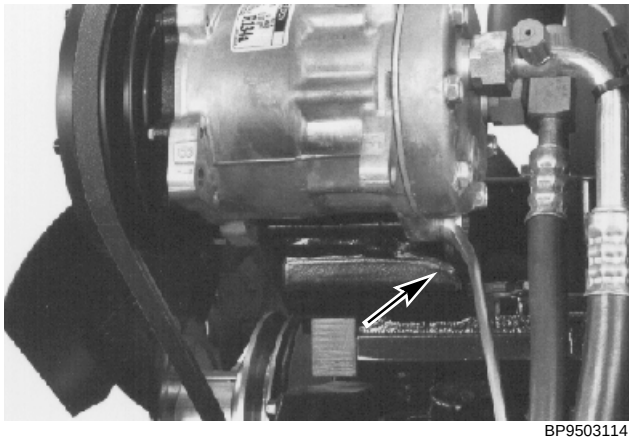
STEP 38



BP9503116

Disconnect the electrical connector (1). Remove the tie strap (2). Remove the hardware (3) from the adjusting straps.

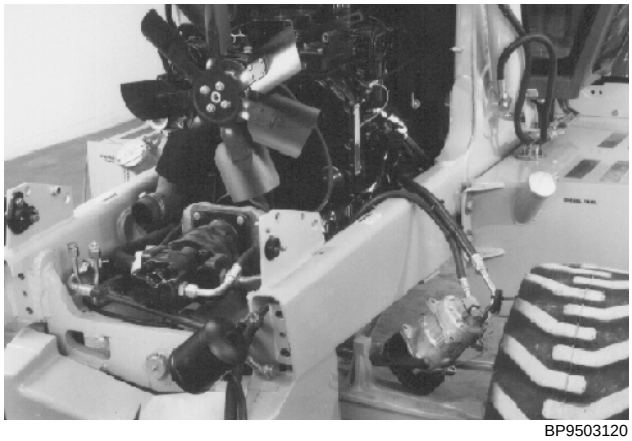
STEP 39



BP9503114

Remove the hardware that fastens the compressor to the bracket.

STEP 40

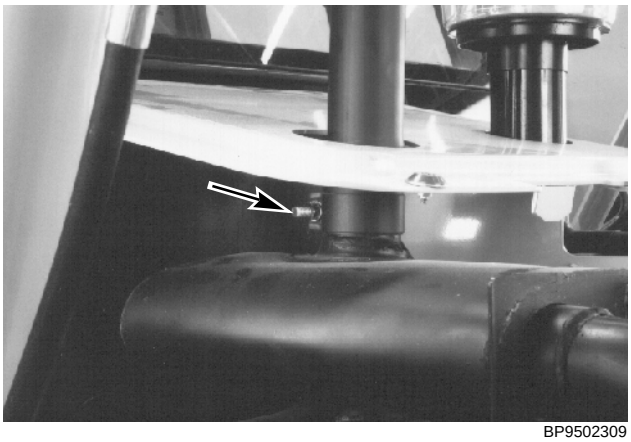


BP9503120

Remove the belt and lay the compressor over the side of the frame.

NOTE: *During installation, adjust the drive belt according the instructions in Section 9003.*

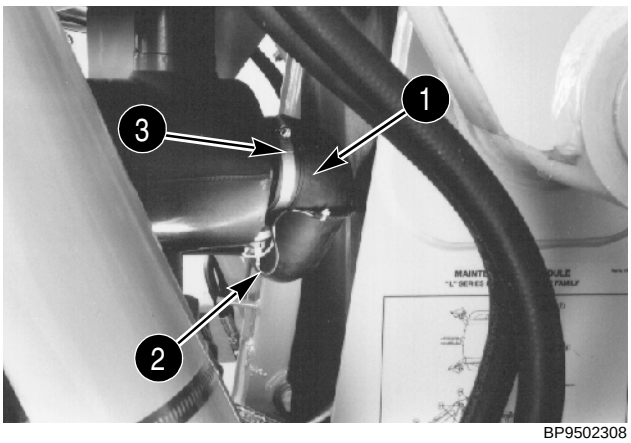
STEP 41



BP9502309

Loosen the clamp for the exhaust pipe at the muffler. Remove the exhaust pipe from the muffler.

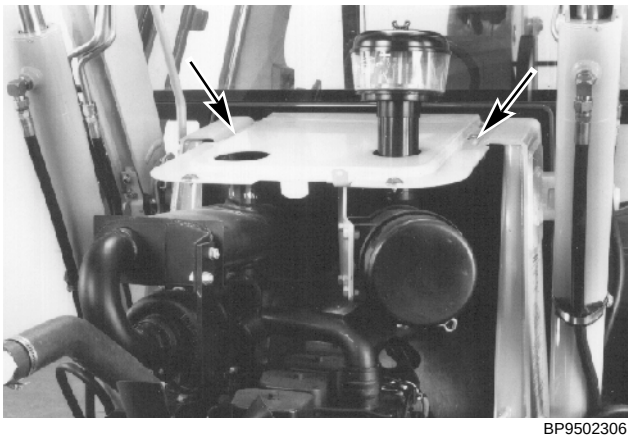
STEP 42



BP9502308

Remove the tie strap (1). Disconnect the electrical connectors (2) for the air restriction indicator. Loosen the clamp (3) on the air cleaner hose. Disconnect the hose from the air cleaner.

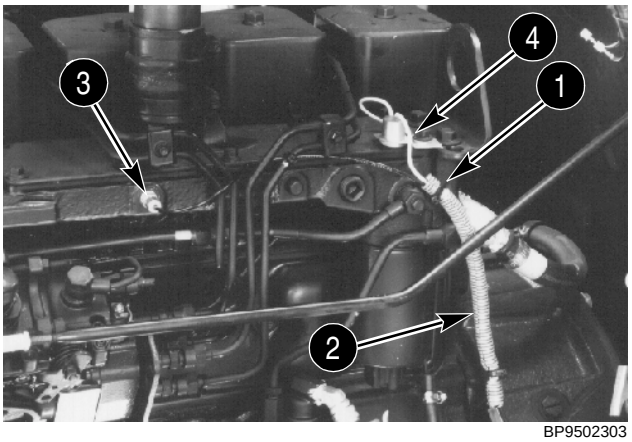
STEP 43



BP9502306

Remove the cap screws and flat washers that fasten the cover to uprights. Remove the cover and air cleaner as an assembly.

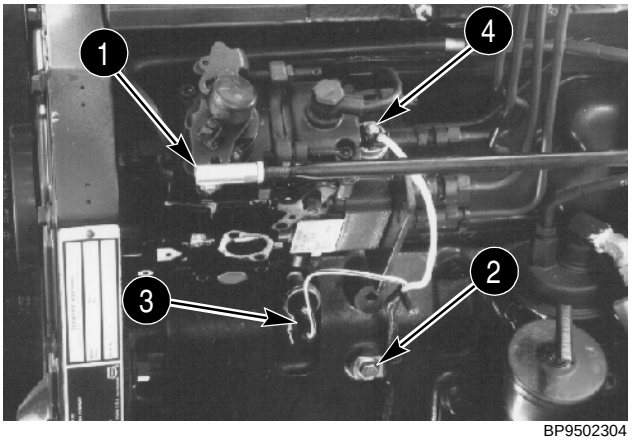
STEP 44



BP9502303

If the machine has ether injection, remove the tie straps (1) and sleeve (2) from the tube (3) and wire (4). Disconnect the tube (3) and the wire (4).

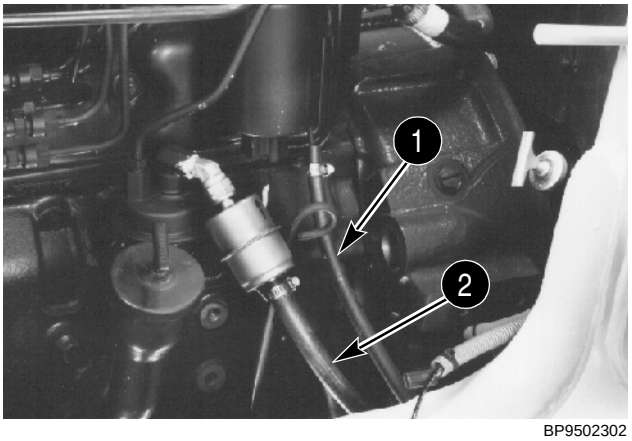
STEP 45



BP9502304

Disconnect the throttle rod (1). Disconnect the wiring clamp (2). Disconnect the wire from the oil pressure sender (3). Disconnect the fuel shutoff wire (4).

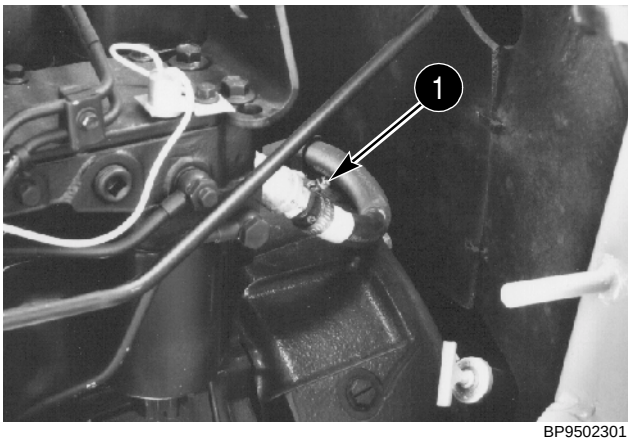
STEP 46



BP9502302

Disconnect the fuel lines (1) and (2).

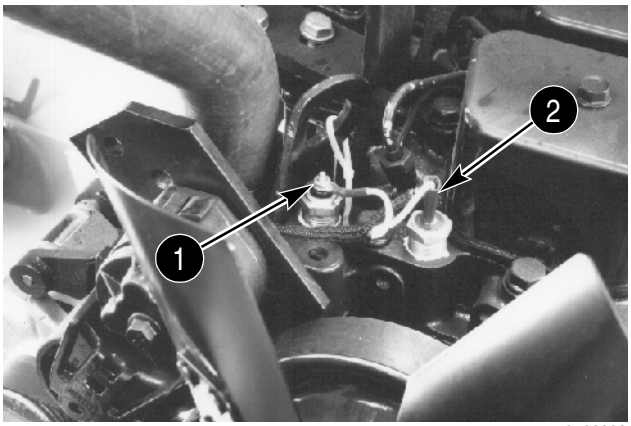
STEP 47



BP9502301

Disconnect the heater hose (1).

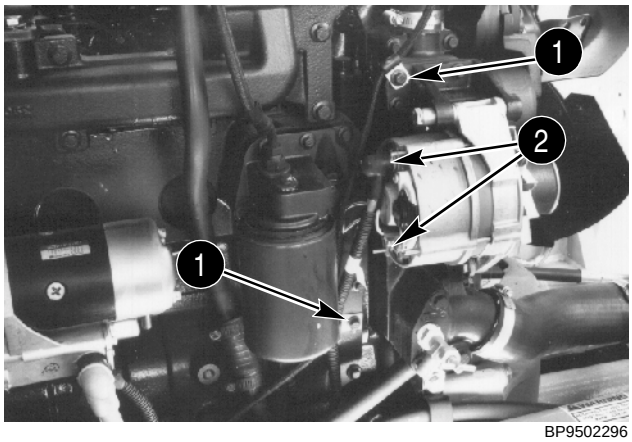
STEP 48



BP9502298

Disconnect the coolant temperature sender (1) and coolant temperature switch (2).

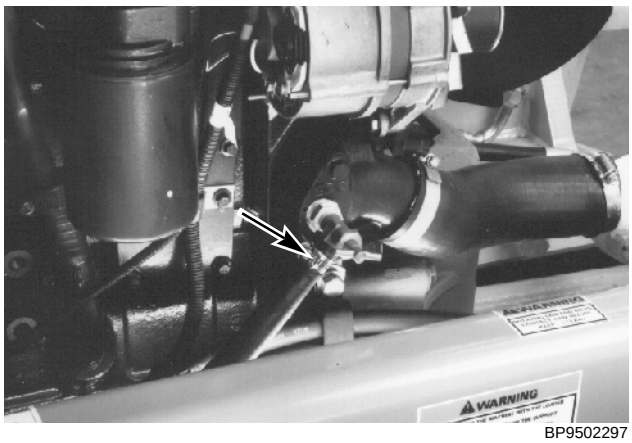
STEP 49



BP9502296

Remove the harness clamps (1). Disconnect the wires (2) from the alternator.

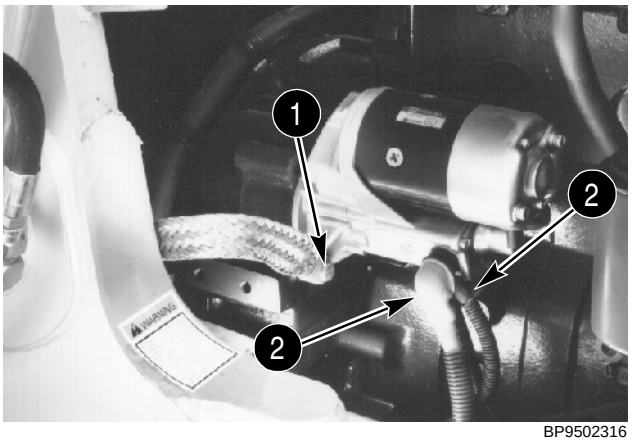
STEP 50



BP9502297

Loosen the clamp and disconnect the heater hose.

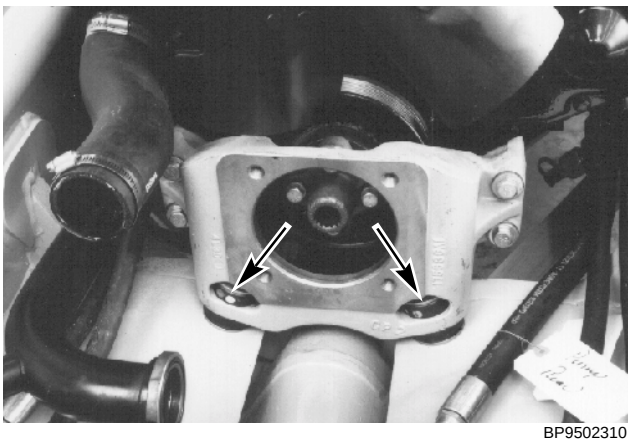
STEP 51



BP9502316

Disconnect the ground strap (1). Disconnect the wires (2) from the starter.

STEP 52

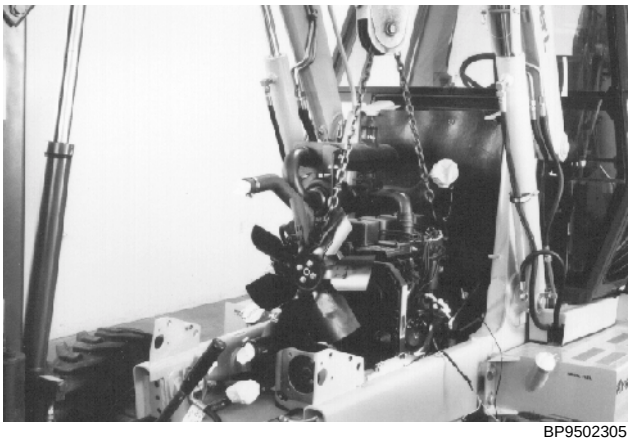


BP9502310

Remove the bolts, flat washers, and nuts from the front engine mount.

NOTE: *During installation, tighten the self-locking nuts to 41 to 47 Nm (360 to 420 pound-inches).*

STEP 53



BP9502305

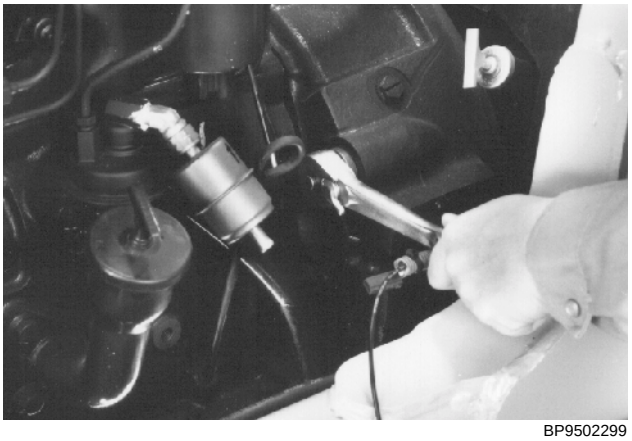
Connect lifting equipment to the lifting eyes on the engine to hold the engine in place.

NOTE: *There are six cap screws with lock washers that fasten the torque converter to the flywheel. The engine must be rotated to align each cap screw with the access hole in the flywheel housing at the left side of the engine.*

STEP 54

Remove the plastic plug from the flywheel housing. Remove the hose from the bracket and remove the cover and gasket from the access hole for the cap screws.

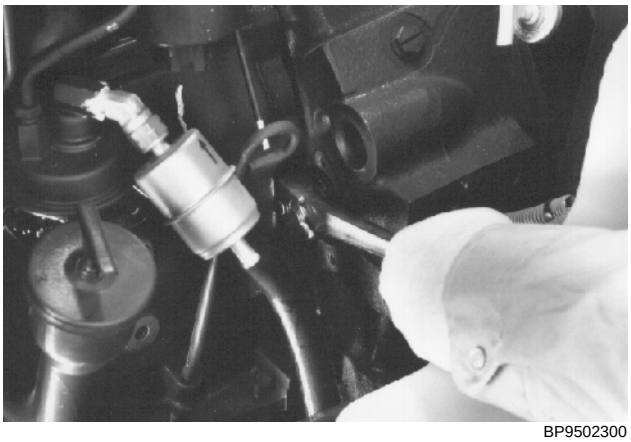
STEP 55



BP9502299

Install the CAS-1690 tool to turn the flywheel for access to the cap screws.

STEP 56



BP9502300

Loosen and remove all six cap screws and lock washers that fasten the torque converter to the flywheel.

NOTE: *Be careful during installation when installing the cap screws and lock washers that fasten the torque converter to the flywheel. Tighten the cap screws to 52 to 57 Nm (38 to 42 pound-feet).*

STEP 57

Loosen and remove the 12 cap screws and flat washers that fasten the transmission to the engine. Move the heater hose and clamps out of the way.

STEP 58

Move the engine forward and raise the engine. Remove the engine from the machine.

NOTE: *Installation of the engine is the reverse of removal.*

IMPORTANT: *Before starting the engine. do the following.*

1. See section 1002 Fluids and Lubricants in this manual for the correct type and quantities needed to replace lost or drained fluids and lubricants before starting the engine.
2. The turbocharger must be filled with oil. Disconnect the wire from the fuel shutoff solenoid. Actuate the starter for 10 to 20 seconds to fill the turbocharger with oil. Connect the wire to the fuel shutoff solenoid.
3. The hydraulic pump **must** be filled with oil. Do the following procedure to fill the hydraulic pump with oil:

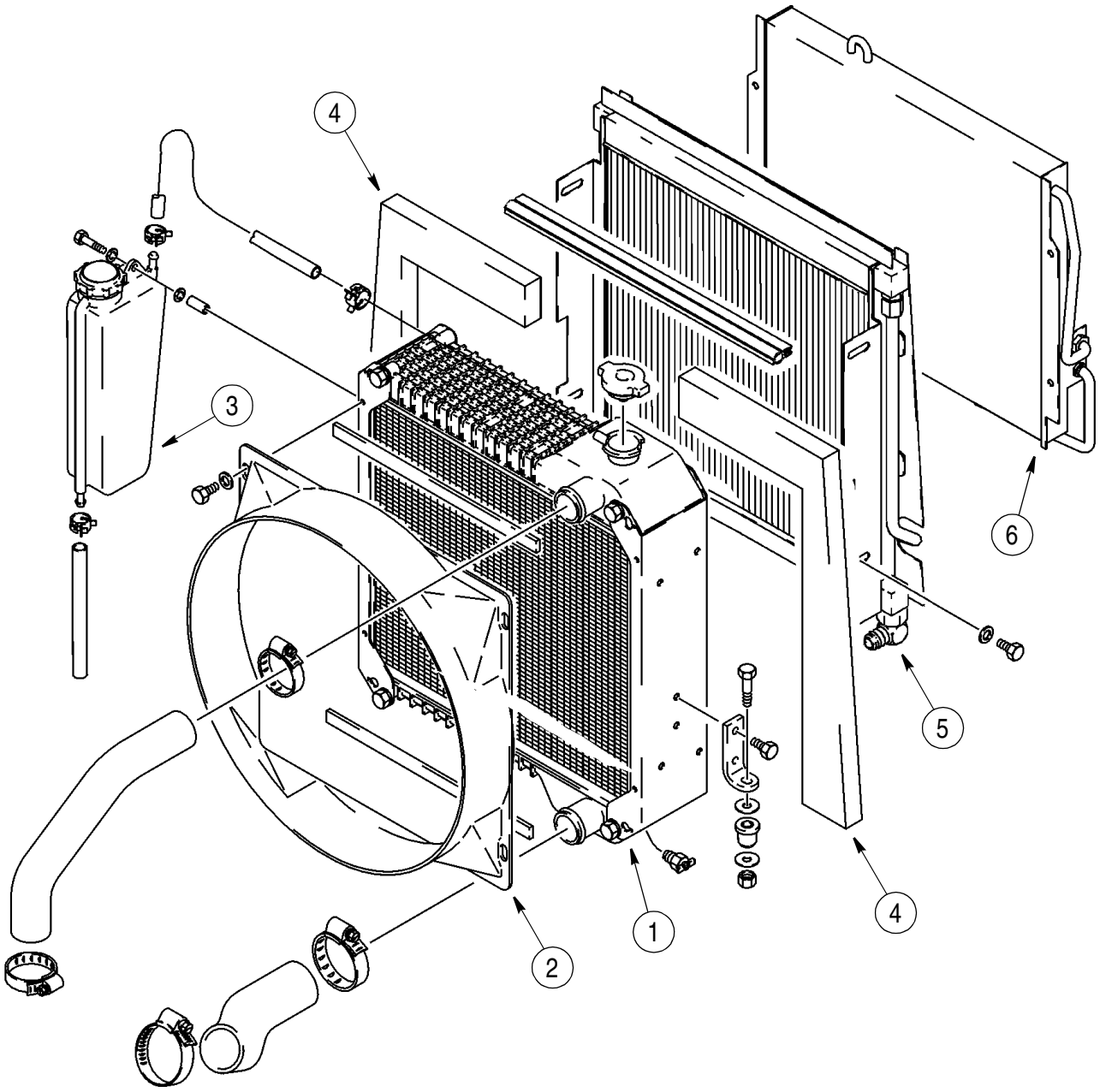
   A. Fill the hydraulic reservoir Make sure the oil level in the hydraulic reservoir is correct.

   B. Remove the cap from the hydraulic reservoir.

   C. Use a nozzle and shop air to pressurize the hydraulic reservoir. Wrap a shop cloth around the end of the hose at the nozzle.

NOTE: *34.5 kPa (5 psi) to 69.0 kPa (10 psi) is all that is required to move the oil. Pressure above 69.0 kPa (10 psi) can damage the hydraulic reservoir.*

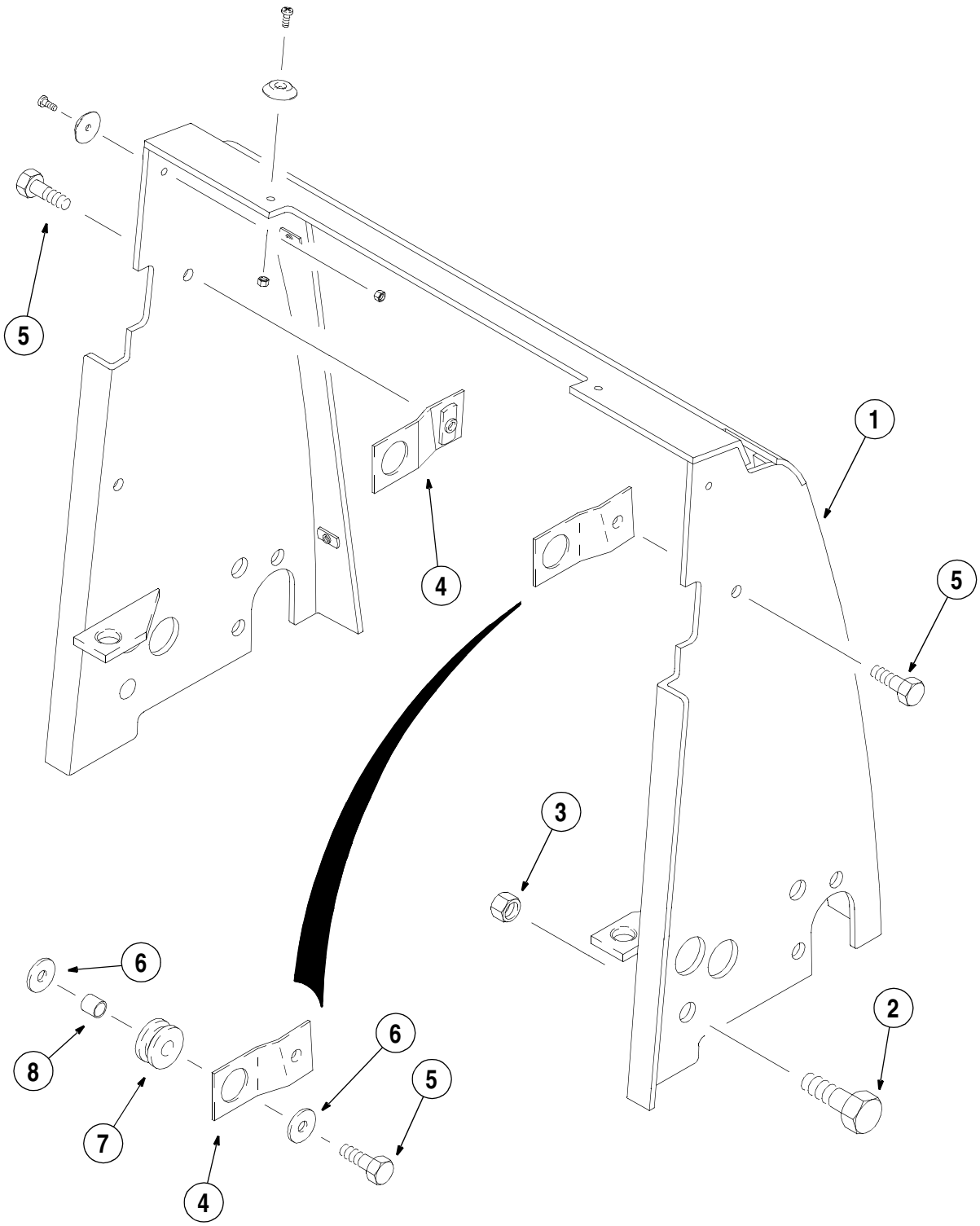
   D. Have another person start and run the engine at low idle while shop air is being applied to the hydraulic reservoir.



BC00E068

1. RADIATOR
2. FAN SHROUD
3. COOLANT RECOVERY BOTTLE
4. BAFFLE
5. OIL COOLER
6. AIR CONDITIONING CONDENSER

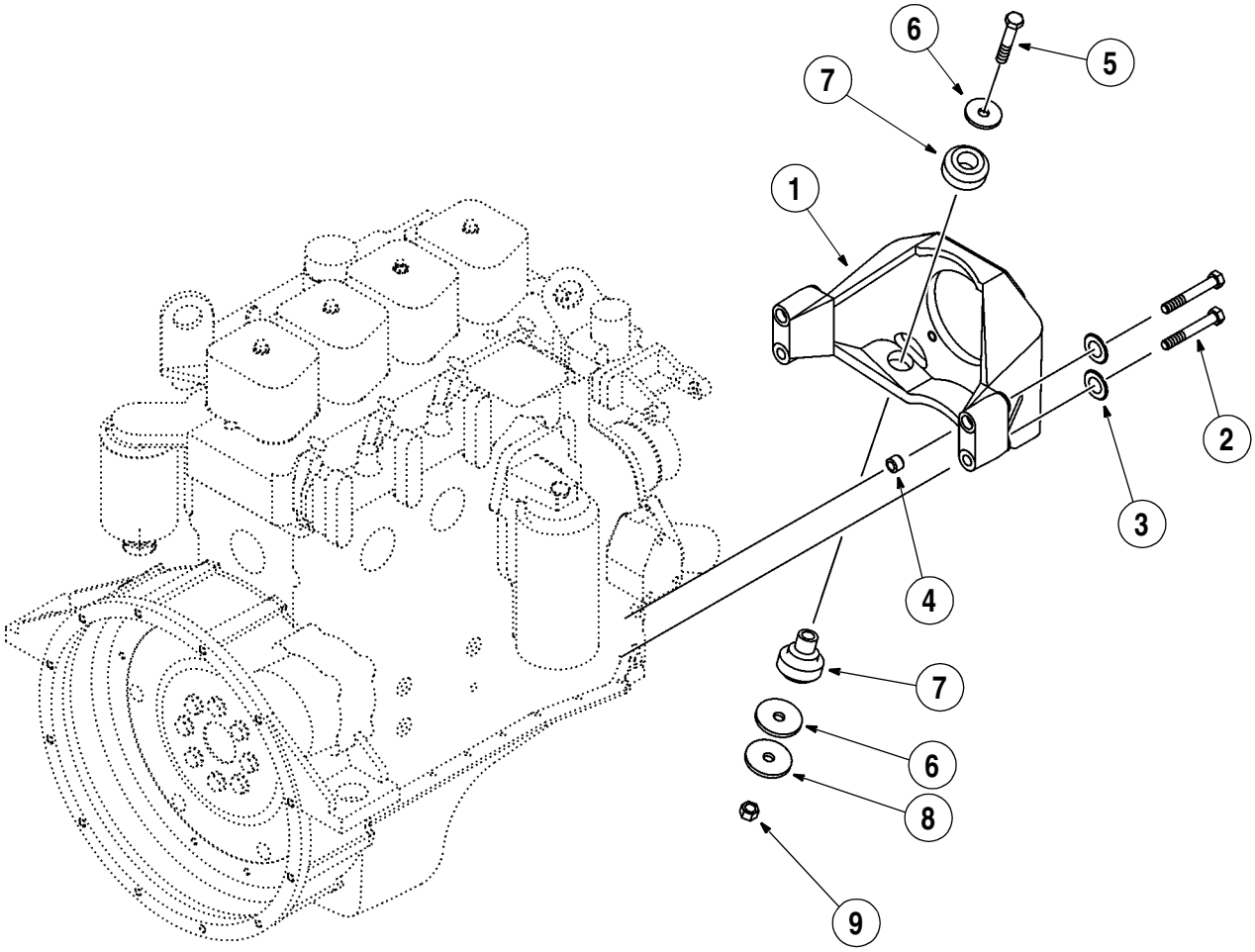
RADIATOR INSTALLATION



B9503082T

1. RADIATOR SHROUD
2. BOLT, RADIATOR SHROUD TO CHASSIS FRAME
3. NUT
4. BRACKET, RADIATOR SHROUD TO RADIATOR
5. CAP SCREW
6. FLAT WASHER, SPECIAL
7. GROMMET
8. SPACER

RADIATOR SHROUD



BC00F052

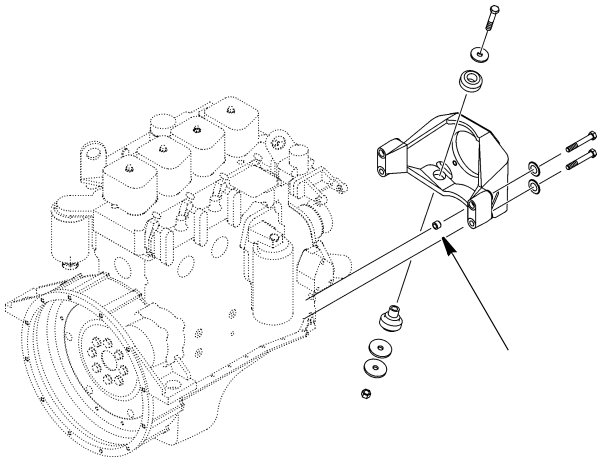
1. ENGINE MOUNT
2. CAP SCREW
3. HARDENED WASHER
4. SPACER
5. BOLT
6. HARDENED WASHER
7. INSULATOR
8. HARDENED WASHER
9. SELF-LOCKING NUT

FRONT ENGINE MOUNT INSTALLATION

INSTALLING THE FRONT ENGINE SUPPORT

NOTE: *If the front engine support was removed for any reason, the front engine support must be aligned with the crankshaft for the engine. If the front engine support is not aligned with the crankshaft of the engine, the pump can be damaged.*

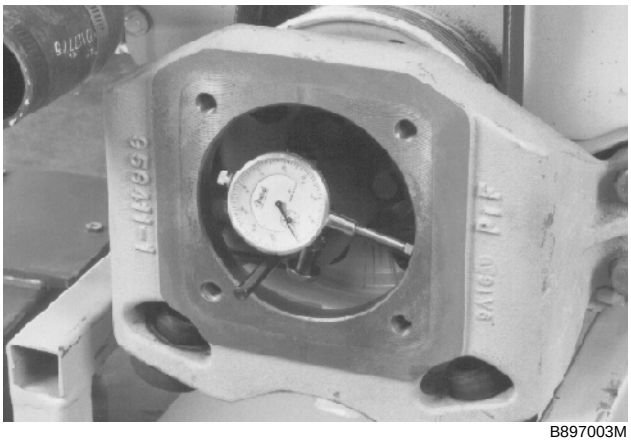
STEP 1



BC00F052

Install a spacer in each top hole in the front engine support. Install the front engine support with the hardware shown.

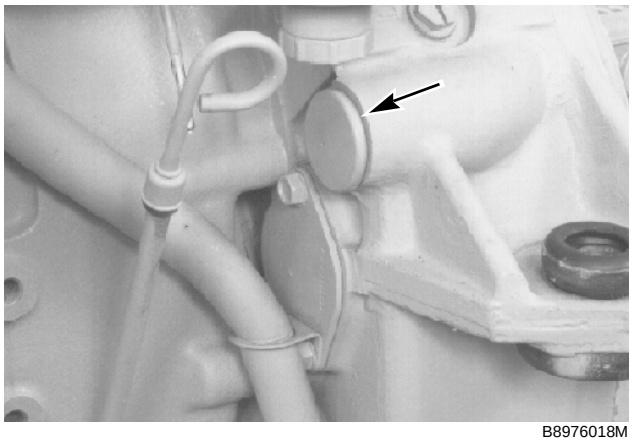
STEP 2



B897003M

Use a dial indicator to check the alignment of the front engine support.

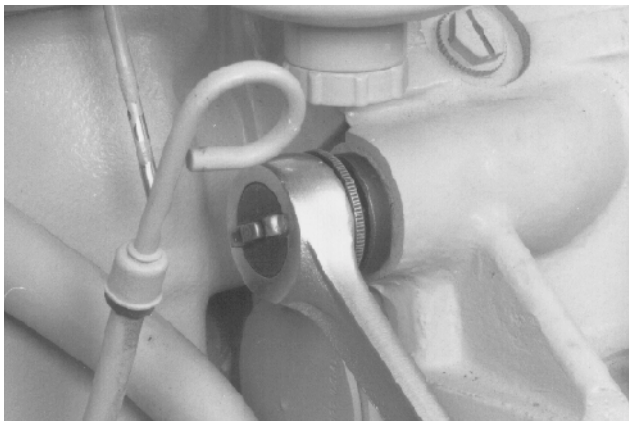
STEP 3



B8976018M

Remove the plastic plug at the left front of the flywheel housing.

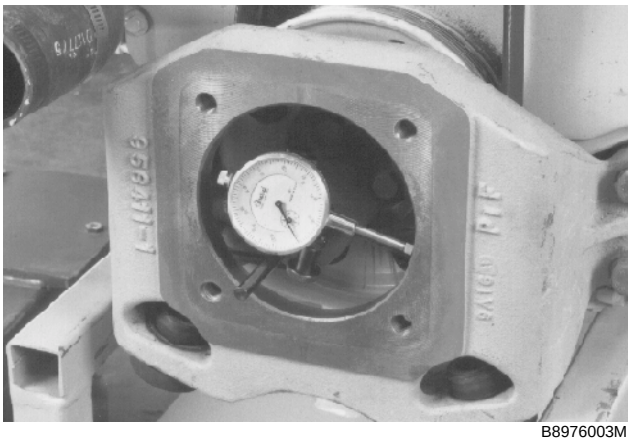
STEP 4



B8976015M

Install the CAS-1690 tool to rotate the flywheel.

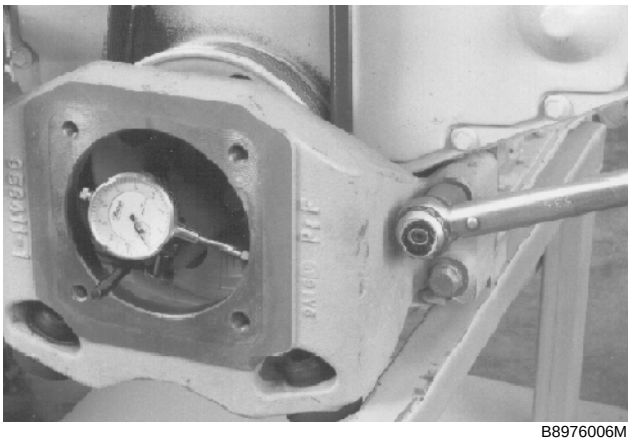
STEP 5



B8976003M

Rotate the flywheel and read the dial indicator. The front engine support must be centered with the crankshaft within 0.25 mm (0.010 inch). If you are unable to center the engine support within the specifications, you must replace the front engine support.

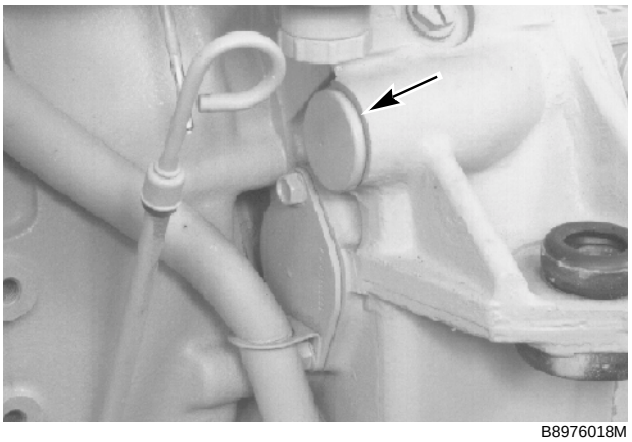
STEP 6



B8976006M

When the front engine support is centered, tighten the cap screws to 89 to 107 Nm (66 to 79 pound-feet).

STEP 7



B8976018M

Remove the CAS-1690 tool and install the plastic plug.

NOTES

2002

Section

2002

STALL TESTS

"L" Series 2

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

CASE CANADA CORPORATION
3350 SOUTH SERVICE ROAD
BURLINGTON, ON L7N 3M6 CANADA

Printed in U.S.A.
Bur 7-54931 January, 1998 (Revised March, 1999)

TABLE OF CONTENTS

SPECIFICATIONS

NOTE: *The following specifications are for an engine with more than 50 hours of operation.*

580L:

Low idle	950 to 1050 rpm (r/min)
Full throttle (no load)	2350 to 2450 rpm (r/min)
Hydraulic stall speed (loader only)	2000 to 2350 rpm (r/min)
Torque converter stall speed	1850 to 2350 rpm (r/min)
Combined Stall	1040 to 1500 rpm (r/min)

580L - Turbo:

Low idle	900 to 975 rpm (r/min)
Full throttle (no load)	2350 to 2400 rpm (r/min)
Hydraulic stall speed (loader only)	2200 to 2350 rpm (r/min)
Torque converter stall speed	2100 to 2350 rpm (r/min)
Combined Stall	1500 to 1900 rpm (r/min)

580 Super L:

Low idle	950 to 1050 rpm (r/min)
Full throttle (no load)	2350 to 2450 rpm (r/min)
Hydraulic stall speed (loader only)	2200 to 2350 rpm (r/min)
Torque converter stall speed	2100 to 2350 rpm (r/min)
Combined Stall	1400 to 1900 rpm (r/min)

590 Super L:

Low idle	950 to 1050 rpm (r/min)
Full throttle (no load)	2350 to 2450 rpm (r/min)
Hydraulic stall speed (loader only)	2200 to 2350 rpm (r/min)
Torque converter stall speed	2100 to 2350 rpm (r/min)
Combined Stall	1500 to 1900 rpm (r/min)

GENERAL INFORMATION

Do the stall test to find the cause of poor performance.

NOTE: *The main relief valve must be set within specifications to achieve accurate readings when performing the following stall tests.*

The engine is run at full throttle and the transmission and hydraulic systems are engaged separately, and then together.

Comparing the engine speeds from the stall test with the check sheets starting on page 5 will help to find the cause of the problem. It can be necessary to check a separate system to find the exact cause of the problem.

Use a photo tachometer or other tachometer of equal accuracy to get accurate results from the stall test.

The engine, transmission and hydraulic system must be at operating temperature before doing the stall test. Heat the oil according to instructions in this section.

PREPARING THE MACHINE FOR THE STALL TEST - MACHINES WITH CARRARO (STANDARD) TRANSMISSION

1. See section 9001 and check the full throttle and low idle speeds.
2. Apply the parking brake.
3. With the engine running at low idle, move the transmission control lever to fourth gear and the direction control lever to FORWARD.
4. Slowly increase the engine speed to full throttle.
5. If the machine begins to move at any time, decrease the engine speed to low idle and stop the engine.
6. Adjust or repair the parking brake as required. See section 7002 or 9001 as required.

PREPARING THE MACHINE FOR THE STALL TEST - MACHINES WITH CLARK (POWERSHIFT) TRANSMISSION

1. See section 9001 and check the full throttle and low idle speeds.
2. Park the machine against a solid barrier, such as a wall and/or apply the parking brake and block the wheels.

> **WARNING:** *The machine can move unexpectedly If the service brakes are not used to hold the machine when operating the engine and converter at stall R.P.M. The Clark (Powershift) transmission will automatically shift down to 2nd gear after shifting from **Forward** to **Neutral** and then to **Forward** again or **Reverse** to **Neutral** and then to **Reverse** again.*
>
> SM0

3. Lock the brake pedals together. Put your foot on the service brakes and hold the machine with service brakes.
4. With the engine running at low idle, move the direction control lever to FORWARD.
5. Select 4th gear on the range selector.
6. Slowly increase the engine speed to full throttle.
7. If the machine begins to move at any time, decrease the engine speed to low idle and stop the engine.

PROCEDURE TO HEAT TORQUE CONVERTER AND HYDRAULIC OIL

1. Apply the parking brake.
2. Start and run the engine at low idle.
3. With the engine running at full throttle, hold the loader control lever in ROLLBACK for 15 seconds.
4. Return the loader control lever to NEUTRAL for 15 seconds.
5. Repeat steps 3 and 4 until the temperature of the oil is 125°F (52°C). The side of the reservoir will be very warm at this temperature.
6. With the engine running at low idle, move the transmission control to fourth gear and the direction control lever to FORWARD.
7. Run the engine at full throttle for 15 seconds.
8. Decrease the engine speed to low idle and move the direction control lever to NEUTRAL for 15 seconds.
9. Repeat steps 6 through 8 until the pointer in the gauge for transmission oil temperature is in the center of the green zone of the gauge for transmission oil temperature.

TEST PROCEDURE

1. Prepare the machine for the stall test according to instructions in this section.
2. Heat the oil according to instructions in this section.
3. Apply the parking brake and start the engine.
4. With the engine running at full throttle, hold the loader control lever in the lift position and read the tachometer. Write the reading on line 1 on the check sheet.
5. Decrease the engine speed to low idle.
6. Move the transmission control lever to fourth gear and the direction control lever to foward.
7. Slowly increase the engine speed to full throttle and read the tachometer. Write the reading on line 2 on the check sheet.
8. With the transmission control lever in fourth gear, the direction control lever in FORWARD, and the engine running at full throttle, hold the loader control lever in the lift position and read the tachometer. Write the reading on line 3 on the check sheet.
9. Decrease the engine speed to low idle (two minutes with turbocharger) and stop the engine.
10. See the check sheet to understand the results of the stall test.

CHECK SHEET - 580L

1. _____ (2000 to 2350 specified) rpm (r/min) hydraulic stall speed

2. _____ (1850 to 2350 specified) rpm (r/min) torque converter stall speed

3. _____ (1040 to 1500 specified) rpm (r/min) hydraulic and torque converter stall speed

rpm (r/min)	
1. 2000 to 2350 2. 1850 to 2350 3. 1040 to 1500	Torque converter, transmission, hydraulic system and engine are probably good.
1. Above 2350 2. Above 2350 3. Above 1500	Engine problem. Check engine speeds. See specifications in Section 9001. Check the timing of the fuel injection pump according to the instructions in section 3410.
1. Below 2000 2. Below 1850 3. Below 1040	Engine problem. Check engine speeds according to instructions in Section 9001. Check the timing of the fuel injection pump according to the instructions in Section 3410. Replace the fuel and air filters.
1. Below 2000 2. 1850 to 2350 3. Below 1040	Hydraulic system problem(s). See section 8002. Check the setting of the main relief valve. Check the output of the hydraulic pump.
1. Above 2350 2. 1850 to 2350 3. Above 1500	Hydraulic system problem(s). See section 8002. Check the setting of the main relief valve. Check the output of the hydraulic pump. Check for leakage in the loader control valve.
1. 2000 to 2350 2. Above 2350 3. Above 1500	Torque converter or transmission problems. See Section 6002 and check the transmission and torque converter.
1. 2000 to 2350 2. Below 1850 3. Below 1040	Torque converter or transmission problems. See Section 6002 and check the transmission and torque converter.

CHECK SHEET - 580L - Turbo

1. _____ (2200 to 2350 specified) rpm (r/min) hydraulic stall speed

2. _____ (2100 to 2350 specified) rpm (r/min) torque converter stall speed

3. _____ (1500 to 1900 specified) rpm (r/min) hydraulic and torque converter stall speed

rpm (r/min)	
1. 2200 to 2350 2. 2100 to 2350 3. 1500 to 1900	Torque converter, transmission, hydraulic system and engine are probably good.
1. Above 2350 2. Above 2350 3. Above 1900	Engine problem. Check engine speeds. See specifications in Section 9001. Check the timing of the fuel injection pump according to the instructions in section 3410.
1. Below 2200 2. Below 2100 3. Below 1500	Engine problem. Check engine speeds according to instructions in Section 9001. Check the timing of the fuel injection pump according to the instructions in Section 3410. Replace the fuel and air filters.
1. Below 2200 2. 2100 to 2350 3. Below 1500	Hydraulic system problem(s). See section 8002. Check the setting of the main relief valve. Check the output of the hydraulic pump.
1. Above 2350 2. 2100 to 2350 3. Above 1900	Hydraulic system problem(s). See section 8002. Check the setting of the main relief valve. Check the output of the hydraulic pump. Check for leakage in the loader control valve.
1. 2200 to 2350 2. Above 2350 3. Above 1900	Torque converter or transmission problems. See Section 6002 and check the transmission and torque converter.
1. 2200 to 2350 2. Below 2100 3. Below 1500	Torque converter or transmission problems. See Section 6002 and check the transmission and torque converter.

CHECK SHEET - 580 Super L

1. _____ (2200 to 2350 specified) rpm (r/min) hydraulic stall speed

2. _____ (2100 to 2350 specified) rpm (r/min) torque converter stall speed

3. _____ (1500 to 1900 specified) rpm (r/min) hydraulic and torque converter stall speed

rpm (r/min)	
1. 2200 to 2350 2. 2100 to 2350 3. 1500 to 1900	Torque converter, transmission, hydraulic system and engine are probably good.
1. Above 2350 2. Above 2350 3. Above 1900	Engine problem. Check engine speeds. See specifications in Section 9001. Check the timing of the fuel injection pump according to the instructions in section 3410.
1. Below 2200 2. Below 2100 3. Below 1500	Engine problem. Check engine speeds according to instructions in Section 9001. Check the timing of the fuel injection pump according to the instructions in Section 3410. Replace the fuel and air filters.
1. Below 2200 2. 2100 to 2350 3. Below 1500	Hydraulic system problem(s). See section 8002. Check the setting of the main relief valve. Check the output of the hydraulic pump.
1. Above 2350 2. 2100 to 2350 3. Above 1900	Hydraulic system problem(s). See section 8002. Check the setting of the main relief valve. Check the output of the hydraulic pump. Check for leakage in the loader control valve.
1. 2200 to 2350 2. Above 2350 3. Above 1900	Torque converter or transmission problems. See Section 6002 and check the transmission and torque converter.
1. 2200 to 2350 2. Below 2100 3. Below 1500	Torque converter or transmission problems. See Section 6002 and check the transmission and torque converter.