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STANDARD TORQUE SPECIFICATIONS

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CASE CORPORATION

Bur 8-71600

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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 graphites, molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres
1/4 in	9-11	12-15
5/16 in	17-21	23-28
3/8 in	35-42	48-57
7/16 in	54-64	73-87
1/2 in	80-96	109-130
9/16 in	110-132	149-179
5/8 in	150-180	203-244
3/4 in	270-324	366-439
7/8 in	400-480	542-651
1.0 in	580-696	787-944
1-1/8 in	800-880	1085-1193
1-1/4 in	1120-1240	1519-1681
1-3/8 in	1460-1680	1980-2278
1-1/2 in	1940-2200	2631-2983

Grade 8 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres
1/4 in	12-15	16-20
5/16 in	24-29	33-39
3/8 in	45-54	61-73
7/16 in	70-84	95-114
1/2 in	110-132	149-179
9/16 in	160-192	217-260
5/8 in	220-264	298-358
3/4 in	380-456	515-618
7/8 in	600-720	814-976
1.0 in	900-1080	1220-1465
1-1/8 in	1280-1440	1736-1953
1-1/4 in	1820-2000	2468-2712
1-3/8 in	2380-2720	3227-3688
1-1/2 in	3160-3560	4285-4827

NOTE: *Use thick nuts with Grade 8 bolts.*

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TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following toques when special torques 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 if used.

Grade 8.8 Bolts, Nuts, and Studs

8.8

Size	Pound-Feet	Newton metres
M4	2-3	3-4
M5	5-6	6.5-8
M6	8-9	10.5-12
M8	19-23	26-31
M10	38-45	52-61
M12	66-79	90-107
M14	106-127	144-172
M16	160-200	217-271
M20	320-380	434-515
M24	500-600	675-815
M30	920-1100	1250-1500
M36	1600-1950	2175-2600

Grade 10.9 Bolts, Nuts, and Studs

10.9

Size	Pound-Feet	Newton metres
M4	3-4	4-5
M5	7-8	9.5-11
M6	11-13	15-17.5
M8	27-32	37-43
M10	54-64	73-87
M12	93-112	125-15
M14	149-179	200-245
M16	230-280	310-380
M20	450-540	610-730
M24	780-940	1050-1275
M30	1470-1770	2000-2400
M36	2580-3090	3500-4200

Grade 12.9 Bolts, Nuts, and Studs

12.9

Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

TORQUE SPECIFICATIONS - O-RING FACE SEAL FITTING

Nom. SAE Dash Size	Tube OD	Thread Size	Pound-Feet	Newton Metres	Thread Size	Pound-Feet	Newton Metres
		O-ring Face Seal End			**O-ring Boss End Fitting or Locknut**		
-4	**1/4 In** 6.4 mm	9/16-18	10-12	14-16	7/16-20	17-20	23-27
-6	**3/8 in** 9.5 mm	11/16-16	18-20	24-27	9/16-18	25-30	33-40
-8	**1/2 in** 12.7 mm	13/16-16	32-40	43-54	3/4-16	45-50	61-68
-10	**5/8 in** 15.9 mm	1-14	46-56	60-75	7/8-14	60-65	81-88
-12	**3/4 in** 19.0 mm	1-3/16-12	65-80	90-110	1-1/16-12	85-90	115-122
-14	**7/8 in** 22.2 mm	1-3/16-12	65-80	90-110	1-3/16-12	95-100	129-136
-16	**1.0 in** 25.4 mm	1-7/16-12	92-105	125-140	1-5/16-12	115-125	156-169
-20	**1-1/4 in** 31.8 mm	1-11/16-12	125-140	170-190	1-5/8-12	150-160	203-217
-24	**1-1/2 in** 38.1 mm	2-12	150-180	200-254	1-7/8-12	190-200	258-271

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Section

1002

FLUIDS AND LUBRICANTS

Bur 8-72841

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FLUIDS AND LUBRICANTS

ENGINE CRANKCASE
- Capacity - with filter change ..... 16 U.S. quarts (15.1 litres)
- Type of oil ..... See Engine Oil Recommendations, page 4

FUEL TANK
- Capacity ..... 43 U.S. gallons (163 litres)
- Type of fuel ..... See Diesel Fuel Specifications, page 5

ENGINE COOLING SYSTEM
- Capacity - without heater ..... 25 U.S. quarts (23.9 litres)
  with heater ..... 27 U.S. quarts (25.6 litres)
- Type of coolant ..... Ethylene glycol type antifreeze and water that is mixed 50% ethylene glycol and 50% water

HYDRAULIC SYSTEM RESERVOIR
- Refill capacity - with filter change ..... 19.5 U.S. gallons (73.8 litres)
  without filter change ..... 18.9 U.S. gallons (71.5 litres)
- Type of fluid ..... Case TCH Fluid

TRANSMISSION
- Capacity ..... 16 U.S. quarts (15.1 litres)
- Type of fluid ..... Case TCH Fluid
- Alternate fluid ..... Type C3 fluid (10W)

REAR AXLE
- Capacity of the center bowl ..... 18 U.S. quarts (17 litres)
- Capacity of each planetary ..... 2.5 U.S. quarts (2.4 litres)
- Type of lubricant ..... Transaxle Fluid (MS 1317)
- Alternate ..... SAE 80W-90 with Limited Slip Additive

FRONT DRIVE AXLE (4 Wheel Drive)
- Capacity of the center bowl ..... 17 U.S. quarts (16 litres)
- Capacity of each planetary ..... 2.5 U.S. quarts (2.4 litres)
- Type of lubricant ..... Transaxle Fluid (MS 1317)
- Alternate ..... SAE 80W-90 with Limited Slip Additive

FRONT AXLE (2 Wheel Drive)
- Capacity of each planetary ..... 1 U.S. quart (0.9 litres)
- Type of lubricant ..... Transaxle Fluid (MS 1317)
- Alternate ..... SAE 80W-90 with Limited Slip Additive

BATTERIES
- Quantity ..... As required
- Type of fluid ..... Add drinking water or distilled water

GREASE FITTINGS
- Quantity ..... As required
- Type of lubricant ..... Case IH molydisulfide grease

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.

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

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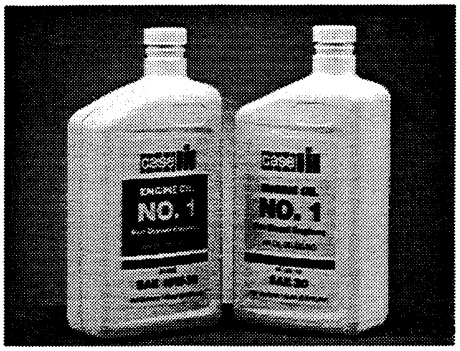
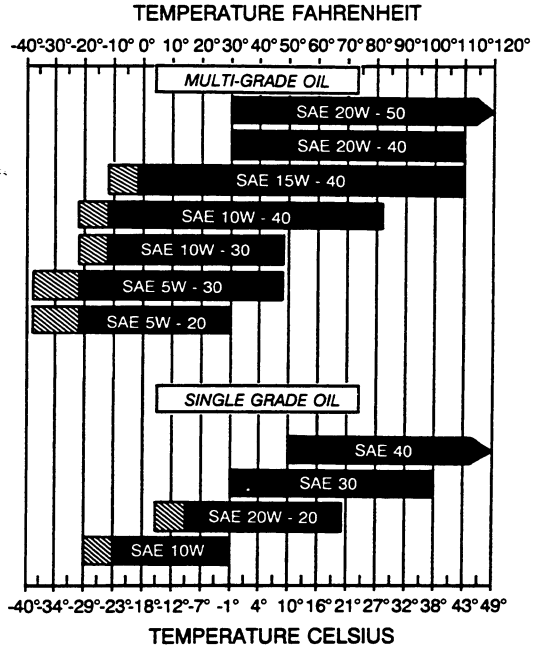


See the chart below for recommended viscosity at ambient air temperature ranges.

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

Oil Viscosity / Temperature Ranges



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▨ **NOTE:** *Use of an engine oil pan heater or an engine coolant heater is required when operating temperatures are in the cross-hatched area.*

DIESEL FUEL SPECIFICATIONS

Use No. 2 diesel fuel in the engine of this machine. The use of other fuels can cause the loss of engine power and high fuel consumption.

In very cold temperatures, a mixture of No. 1 and No. 2 diesel fuels is temporarily permitted. See the following Note.

NOTE: *See your fuel dealer for winter fuel requirements in your area. If the temperature of the fuel lowers below the cloud point (wax appearance point), wax crystals in the fuel will 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.

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	140°F (60°C)
Cloud point (wax appearance point), maximum	-5°F (-20°C) See Note above
Pour point, maximum	-15°F (-26°C) See Note above
Distillation temperature, 90% point	540 to 640°F (282 to 338°C)
Viscosity, at 100°F (38°C)	
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	.05 of 1%
Sulfur, by weight, maximum	.50 of 1%
Copper strip corrosion, maximum	No. 2
Ash, by weight, maximum	.01 of 1%

Engine fuel is flammable and can cause a fire or an explosion. Do not fill the fuel tank or service the fuel system near an open flame,welding, burning cigars, cigarettes, etc. 84-100-A

LOCTITE PRODUCT CHART

Product	Color	Similar Products	Gap (In Inches)	Strength (Steel/Steel)	Working Temperature Range-Farenheit	Fixture/Full Cure (Steel/Steel) Time	Primer	Description
#3	Dark Brown					24 hr	N/A	Form a Gasket (works with oil, fuel or grease) Pliable
80	Yellow					Fast	N/A	Weatherstrip Adhesive
123	Clear					N/A	N/A	Parts Cleaner Fluid
220	Blue	290	0.003	57/143 in lbs	-65 to +250	6 min/24 hrs	747	Wicking Threadlocker
221	Purple	222	0.005	75/44 in lbs	-65 to +300	2 min/24 hrs	747	Low Strength Threadlocker
222	Purple		0.005	53/30 in lbs	-65 to +300	20 min/24 hrs	764	Low Strength Threadlocker (Small Screws)
225	Brown	222	0.010	45/25 in lbs	-65 to +300	7 min/24 hrs	747	Low Strength Threadlocker
242	Blue		0.005	80/50 in lbs	-65 to +300	10 min/24 hrs	764	Medium Strength Threadlocker
262	Red	271	0.005	160/190 in lbs	-65 to +300	5 min/24 hrs	747	High Strength Threadlocker
270	Green	271	0.007	160/320 in lbs	-65 to +300	3 min/24 hrs	747	High Strength Threadlocker
271	Red	262	0.007	160/320 in lbs	-65 to +300	10 min/24 hrs	764	High Strength Threadlocker
272	Red	620	0.007	180/220 in lbs	-65 to +450	30 min/24 hrs	764	High Temperature, High Strength
275	Green	277	0.010	210/300 in lbs	-65 to +300	3 min/24 hrs	747	High Strength Threadlocker
277	Red		0.010	225/300 in lbs	-65 to +300	60 min/24 hrs	764	High Strength Threadlocker
290	Green		0.003	85/350 in lbs	-65 to +300	6 min/24 hrs	764	Wicking Threadlocker
*404	Clear	495	0.006	3200 psi	-65 to +180	30 sec/24 hrs	NA	Instant Adhesive
*406	Clear		0.004	3200 psi	-65 to +180	15 sec/24 hrs	N/A	Surface Insensitive Adhesive
*409	Clear	454	0.008	2500 psi	-65 to +180	50 sec/24 hrs	N/A	Gel Instant Adhesive
*414	Clear		0.006	2500 psi	-65 to +180	30 sec/24 hr	N/A	Instant Adhesive
*415	Clear	454	0.010	2500 psi	-65 to +180	50 sec/24 hrs	N/A	Gap Filling Instant Adhesive (Metals)
*416	Clear	454	0.010	2500 psi	-65 to +180	50 sec/24 hrs	N/A	Gap Filling Instant Adhesive (Plastics)
*420	Clear		0.002	2500 psi	-65 to +180	15 sec/24 hrs	N/A	Wicking Instant Adhesive
*422	Clear	454	0.020	2800 psi	-65 to +180	60 sec/24 hrs	N/A	Gap Filling Instant Adhesive
*430	Clear		0.005	2500 psi	-65 to +180	20 sec/24 hrs	N/A	Metal Bonding Adhesive
*445	White/Black		0.250	2000 psi	-65 to +180	5 min/24 hrs	N/A	Fast Setting 2 Part Epoxy
*454	Clear		0.010	3200 psi	-65 to +180	15 sec/24 hrs	N/A	Surface Insensitive Gen Instant Adhesive
*495	Clear		0.004	2500 psi	-65 to +180	20 sec/24 hrs	N/A	General Purpose Instant Adhesive
*496	Clear		0.005	2500 psi	-65 to +180	20 sec/24 hrs	N/A	Metal Bonding Adhesive
504	Brt Orange	515	0.030	750 psi	-65 to +300	90 min/24 hrs	None	Rigid Gasket Eliminator
509	Light Blue		0.020	750 psi	-65 to +320	6 hr/72 hrs	764	Flange Sealant
510	Red		0.020	1000 psi	-65 to +400	30 min/24 hrs	764	High Temperature, GAsket Eliminator
515	Purple		0.010	750 psi	-65 to +300	1 hr/24 hrs	764	Gasket Eliminator 515

Rac 8-98902 * Products 404-496 (except for #445) are all instant adhesives (super glues) they differ mostly in viscosity Printed in U.S.A.

LOCTITE PRODUCT CHART

Product	Color	Similar Products	Gap (In Inches)	Strength (Steel/Steel)	Working Temperature Range-Farenheit	Fixture/Full Cure (Steel/Steel) Time	Primer	Description
518	Red	515	0.030	500psi	-65 to +300	1hr/24 hrs	764	Gasket Eliminator 518 for Aluminum
542	Brown	569	N/A	132/92 in lbs	-65 to +300	2 hr/24 hrs	747	Hydraulic Sealant
545	Purple		N/A	25/20 in lbs	-65 to +300	4 hr/24 hrs	747	Low Strength Pneumatic/Hydraulic Sealant
549	Orange	504	0.020	2500 psi	-65 to +300	2 hr/24 hrs	747	Instant Seal Plastic Gasket
554	Red	277	0.015	240/240 in lbs	-65 to +300	2 to 4 hrs/24 hrs	764	Refrigerant Sealant
567	White	592	N/A	500 psi	-65 to +400	4 hrs/24 hrs	764	Pipe Sealant for Stainless Steel
568	Orange	277	0.015	2500 psi	-65 to +300	12 hrs/24 hrs	764	Plastic Gasket
569	Brown	545	0.010	40/25 in lbs	-65 to +300	1 hr/24 hrs	764	Hydraulic Sealant
570	Brown	592	N/A	25/40 in lbs	-65 to +300	6 hrs/72 hrs	764	Steam Sealant
571	Brown	592	0.015	40/20 in lbs	-65 to +300	2 to 4 hrs/24 hrs	764	Pipe Sealant
572	White	578.575	N/A	80/27 in lbs	-65 to +300	24 hrs/72 hrs	None	Gasketing
592	White		0.020	500 psi	-65 to +400	4 hrs/72 hrs	736	Pipe Sealant with Teflon
593	Black		0.250	400 psi	-95 to +400	30 min/24 hrs	N/A	RTV Silicone
601	Green	609	0.005	3000 psi	-65 to +300	10 min/24 hrs	764	Current PIN #609
609	Green		0.005	3000 psi	-65 to +300	10 min/24 hrs	764	General Purpose Retaining Compound
620	Green	640	0.015	3000 psi	-65 to +450	30 min/24 hrs	747	High Temperature Retaining Compound
635	Green	680	0.010	4000 psi	-65 to +300	1 hr/24 hrs	747	High Strength Retaining Compound
638	Green	680	0.015	4100 psi	-65 to +300	10 min/24 hrs	747	High Strength Retaining Compound
640	Green	620	0.007	3000 psi	-65 to +400	1 hr/24 hrs	747	High Temperature Retaining Compound
660	Silver		0.020	3000 psi	-65 to +300	20 min/24 hrs	764	Quick Metal
675	Green	609	0.005	3000 psi	-65 to +300	20 min/24 hrs	747	General Purpose Retaining Compound
680	Green	635	0.015	4000 psi	-65 to +300	10 min/24 hrs	747	High Strength Retaining Compound
706	Clear	755	N/A	N/A	N/A	N/A	N/A	Cleaning Solvent
707	Amber		N/A	N/A	N/A	N/A	N/A	Activaltor for Structural Adhesives
736	Amber		N/A	N/A	N/A	N/A	N/A	Primer NF
738	Amber		N/A	N/A	N/A	N/A	N/A	Depend Activator
747	Yellow	N/A	N/A	N/A	N/A	N/A	N/A	Primer T
751	Clear		N/A	N/A	N/A	N/A	N/A	Activator for Structural Adhesives
755	Clear		N/A	N/A	N/A	N/A	N/A	Cleaning Solvent
764	Green		N/A	N/A	N/A	N/A	N/A	Primer N
767	Silver		N/A	N/A	-65 to +1600	N/A	N/A	Anti-Seize Lubricant

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SECTION INDEX - ENGINES

Section

2001

ENGINE REMOVAL AND INSTALLATION AND RADIATOR REMOVAL AND INSTALLATION

CASE CORPORATION

Bur 8-74651

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SPECIFICATIONS

Special torques

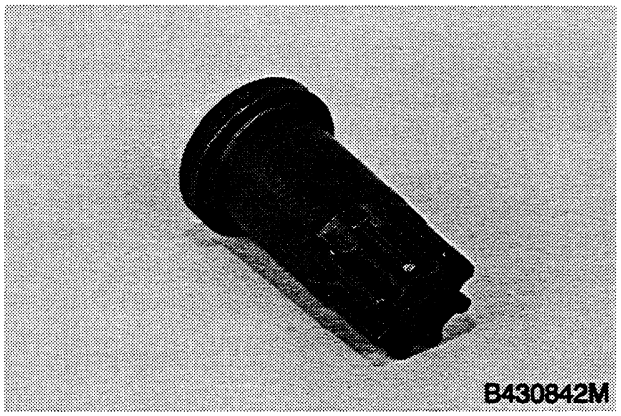
Cap screws that fasten the flex plates to the flywheel ..... 300 to 360 pound-inches (34 to 41 Nm)

Hose clamps on the inlet hose and outlet hose for the hydraulic oil filter ..... 144 to 180 pound-inches (16 to 20 Nm)

Bolts that fasten the front engine mounting brackets to the frame ..... 150 to 160 pound-feet (203 to 217 Nm)

Cap screws that fasten the front counterweight to the frame ..... 150 to 180 pound-feet (203 to 244 Nm)

SPECIAL TOOLS



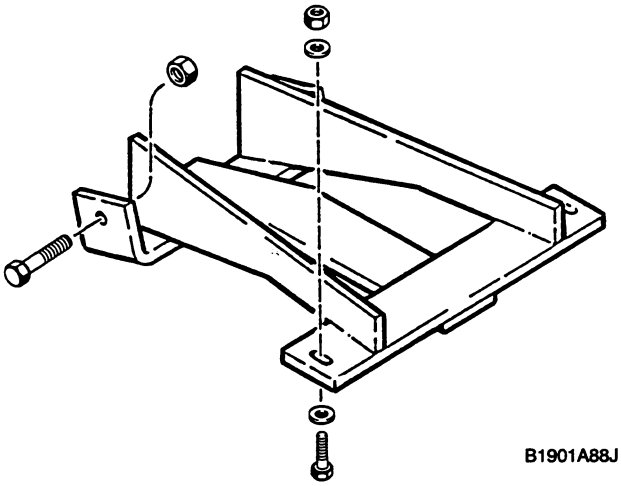
CAS-1690 Tool Used to Rotate the Flywheel

ENGINE REMOVAL

STEP 1

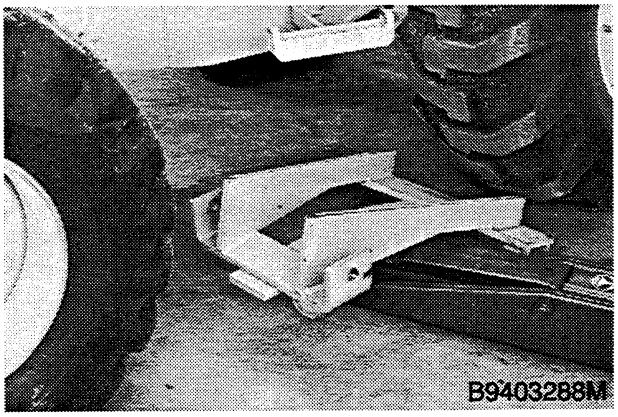
Park the machine on a level surface and apply the parking brake.

STEP 2



If the machine has four wheel drive, use a floor jack to hold the guard while the nuts, washers, and bolts are being removed.

STEP 3

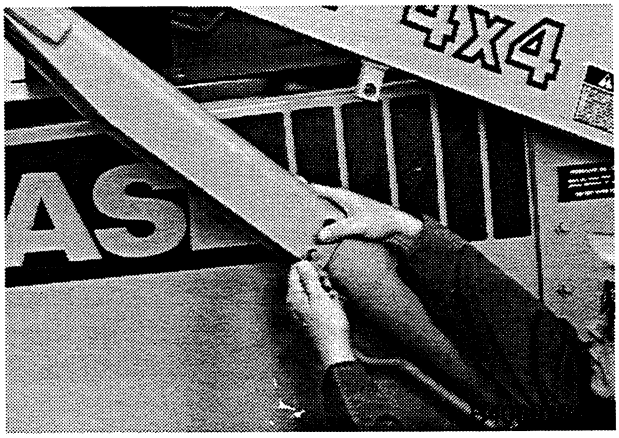


Carefully lower the guard and remove the guard from under the machine.

STEP 4

Remove the pin that holds the strut in place and lower the strut onto the lift cylinder.

STEP 5

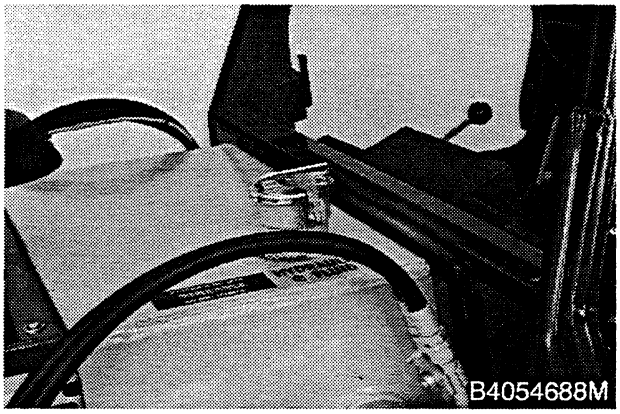


Raise the loader frame until the strut is against the end of the lift cylinder. Install the pin in the strut. Stop the engine.

STEP 6

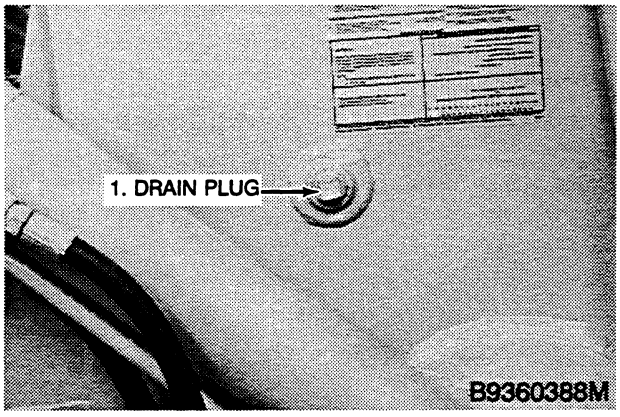
Remove both side panels for the engine compartment.

STEP 7



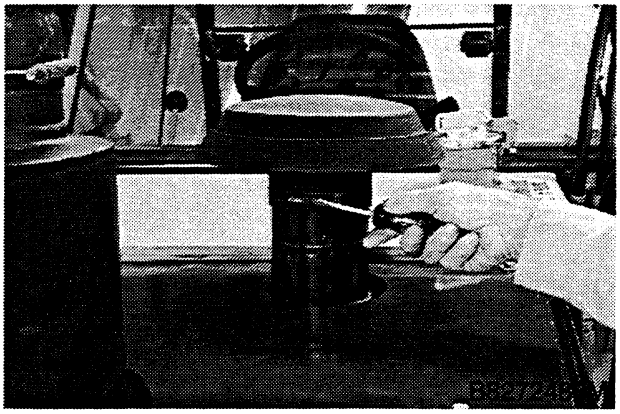
Loosen the fill cap for the reservoir to remove the air pressure.

STEP 8



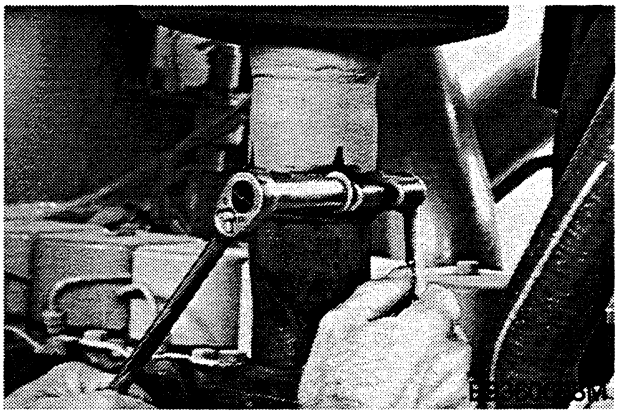
Drain or use a pump to remove the oil from the reservoir. The reservoir contains 18.9 U.S. gallons (71.5 litres) of oil.

STEP 9



Loosen the clamp for the air cleaner cap and remove the air cleaner cap.

STEP 10

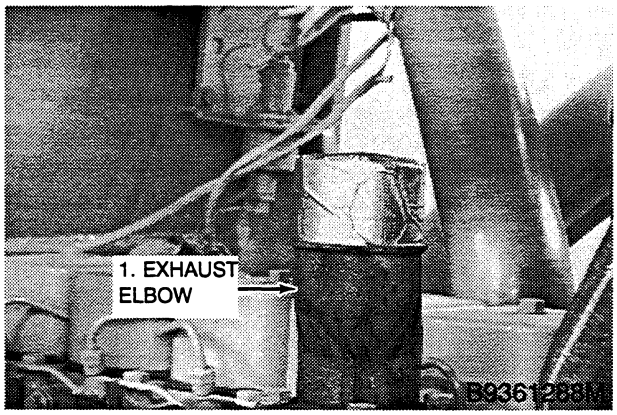


Loosen the clamp for the muffler.

STEP 11

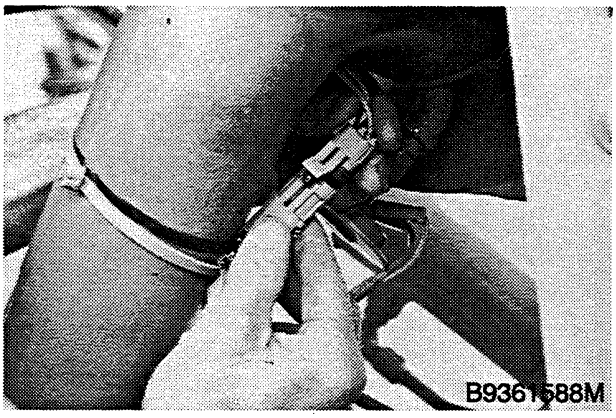
Remove the muffler.

STEP 12



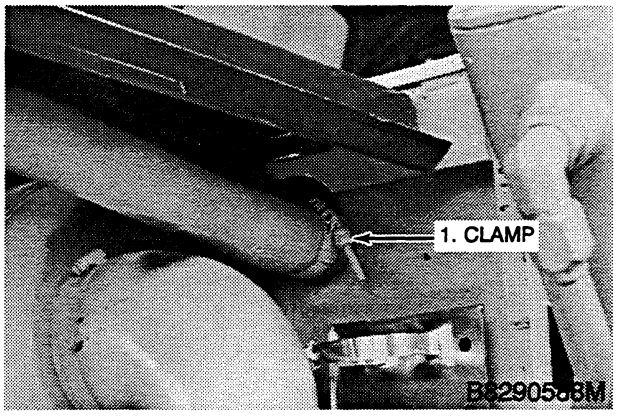
Cover or close the opening in the exhaust elbow.

STEP 13



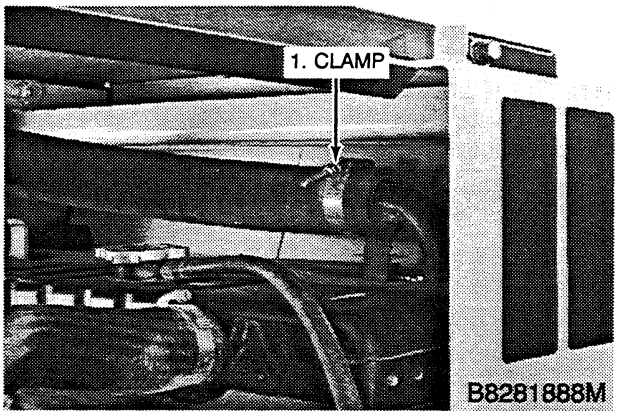
Disconnect the wire harness for the hydraulic oil filter.

STEP 14



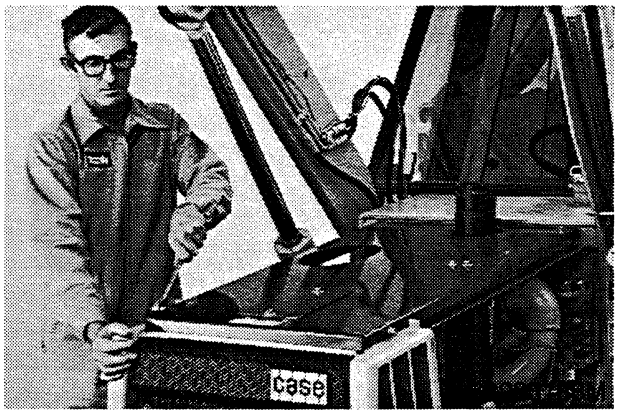
Loosen the clamp that connects the hose from the hydraulic oil filter to the reservoir. Disconnect the hose. Install a plug in the hose and a cap on the reservoir.

STEP 15



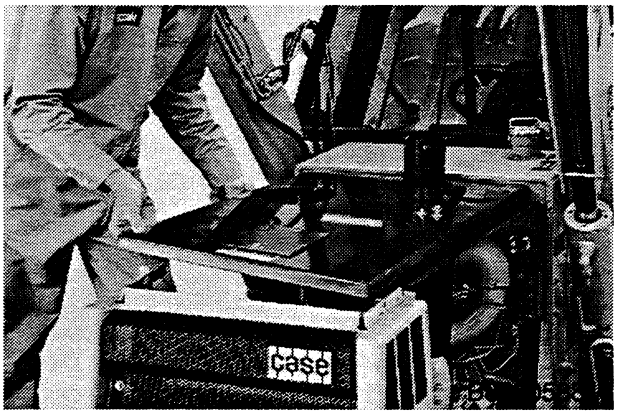
Loosen the clamp that connects the hose for the hydraulic oil filter to the oil cooler. Disconnect the hose. Install a plug in the hose and a cap on the tube.

STEP 16



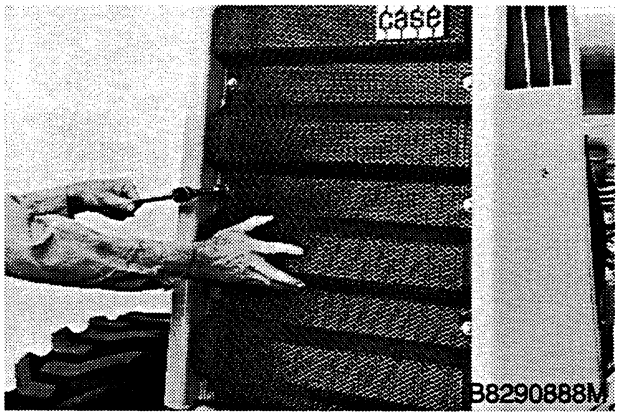
Loosen and remove the cap screws, lock washers, flat washers, and spacers that fasten the front of the hood. Loosen and remove the nuts, lock washers, flat washers, and bolts that fasten the rear of the hood.

STEP 17



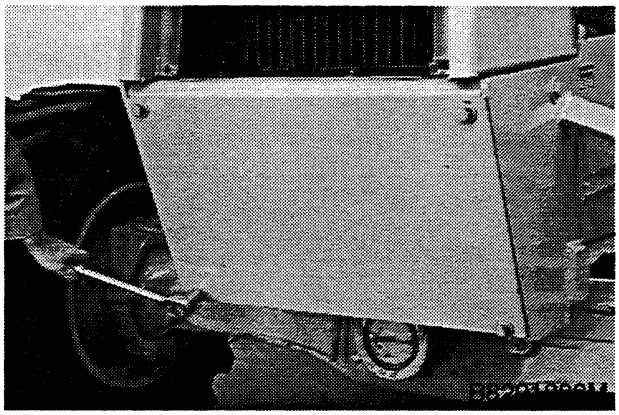
Remove the hood. If necessary, have another person help you.

STEP 18



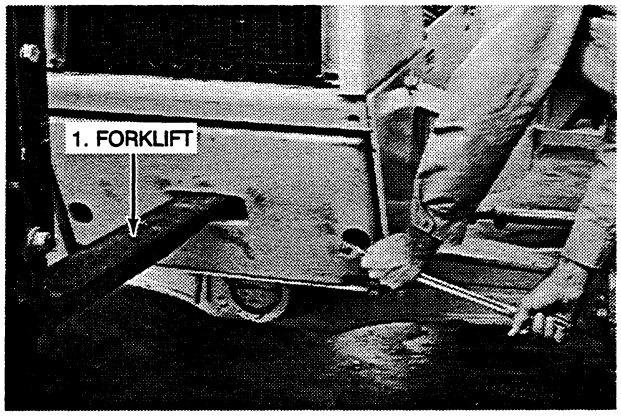
Loosen and remove the cap screws, lock washers, and flat washers that fasten the grille. Remove the grille.

STEP 19



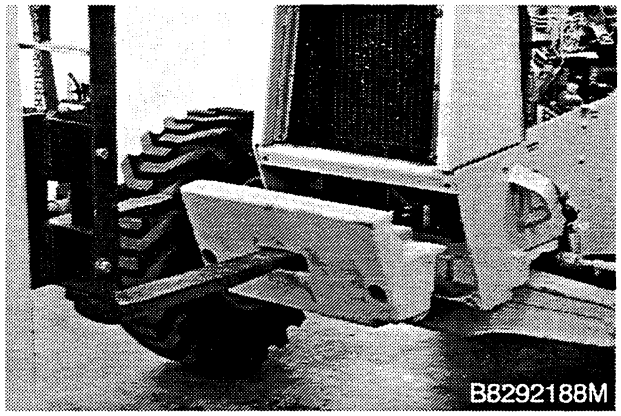
Loosen and remove the cap screws, lock washers, and flat washers that fasten the cover to the front of the machine. Remove the cover.

STEP 20



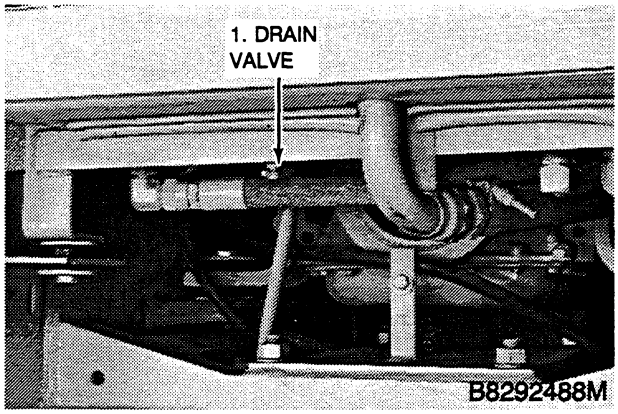
If your machine is equipped with an extendable dipper, loosen and remove the cap screws and flat washers that fasten the counterweight to the frame. The weight of the counterweight is 710 pounds (322 kg).

STEP 21



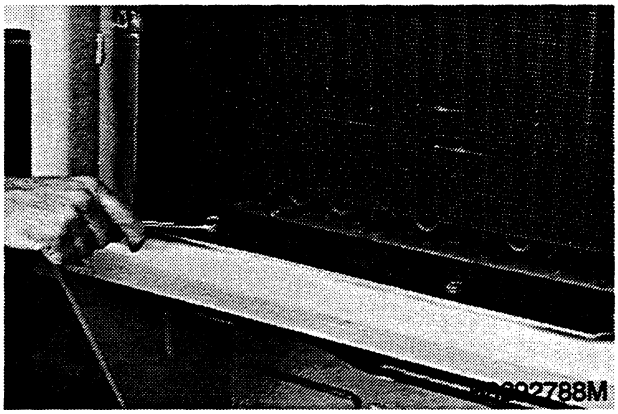
Remove the counterweight.

STEP 22



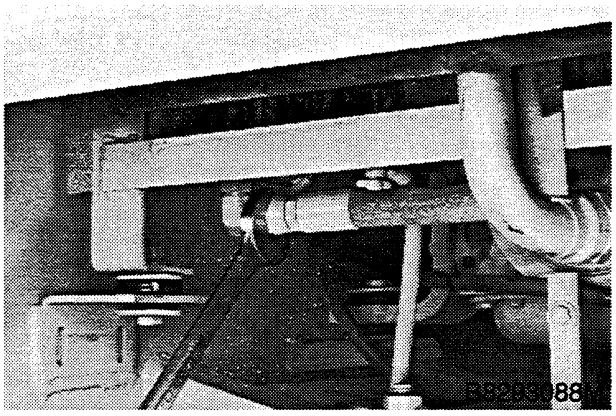
Remove the cap from the radiator and open the drain valve to drain the cooling system. The cooling system holds approximately 6.75 U.S. gallons (25.6 litres) of coolant.

STEP 23



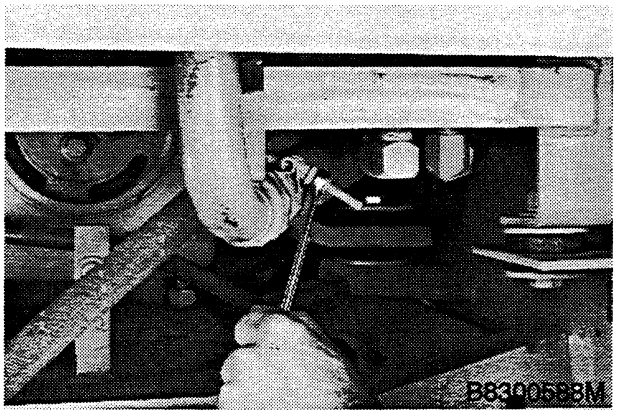
Loosen and remove the cap screws, lock washers, and flat washers that fasten the plate to the frame. Remove the plate.

STEP 24



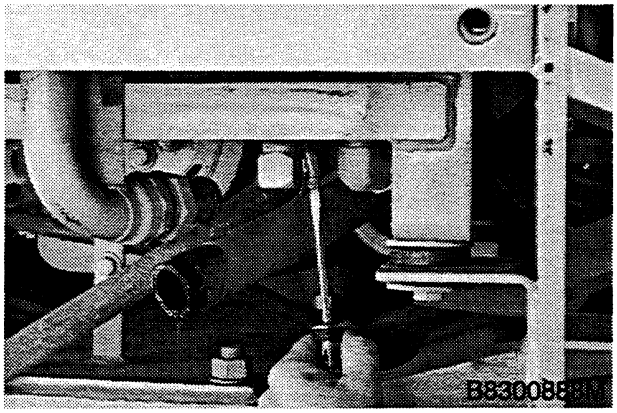
Disconnect the hose from the right side of the transmission oil cooler.

STEP 25



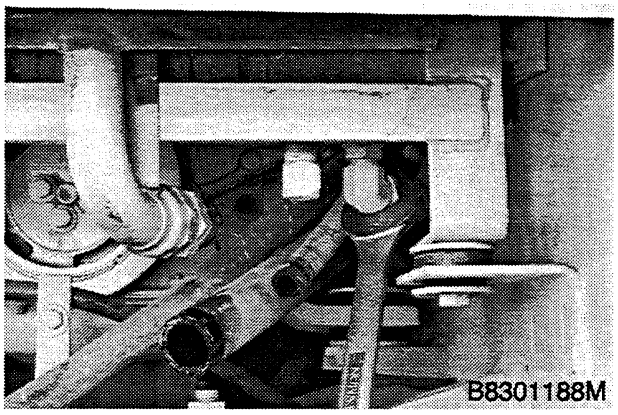
Loosen the clamp and disconnect the hose from the hydraulic oil cooler.

STEP 26



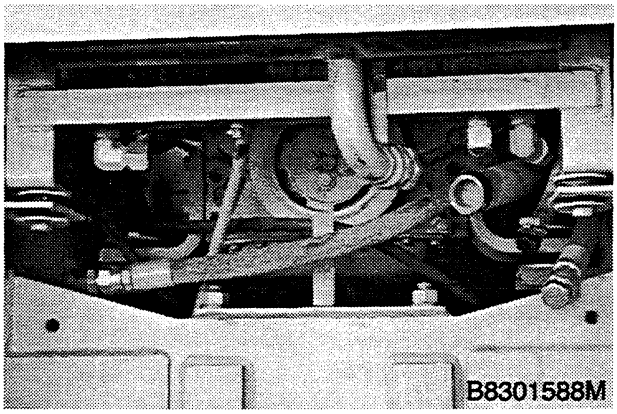
Loosen the clamp and disconnect the hose from the fitting.

STEP 27



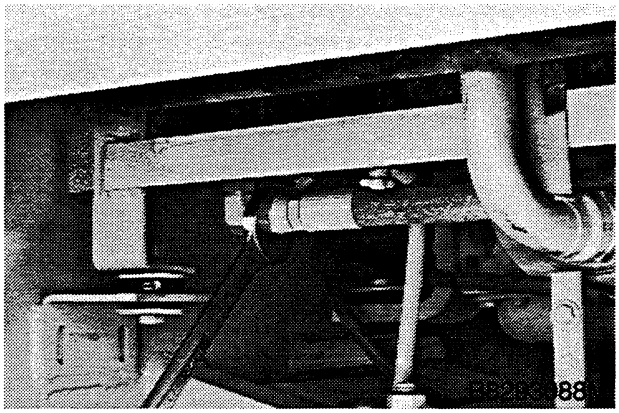
Disconnect the hose from the left side of the transmission oil cooler.

STEP 28



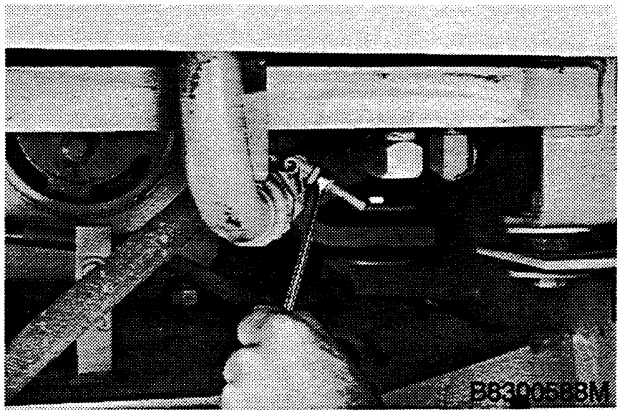
Install plugs in the hoses and caps on the fittings.

STEP 24



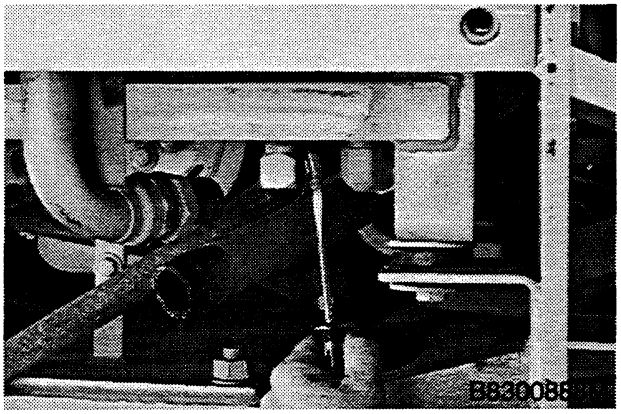
Disconnect the hose from the right side of the transmission oil cooler.

STEP 25



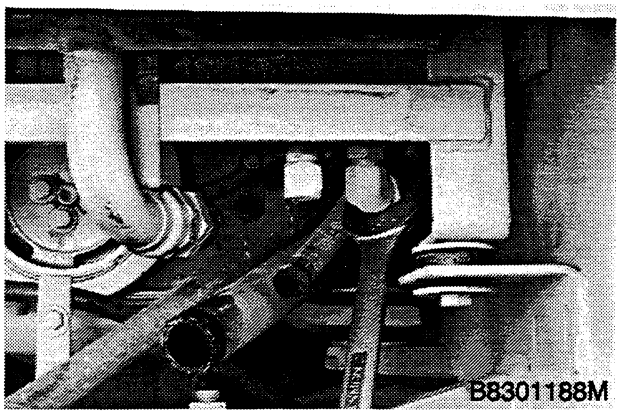
Loosen the clamp and disconnect the hose from the hydraulic oil cooler.

STEP 26



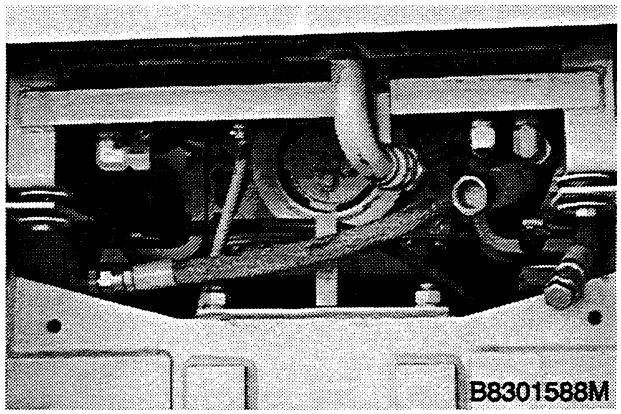
Loosen the clamp and disconnect the hose from the fitting.

STEP 27



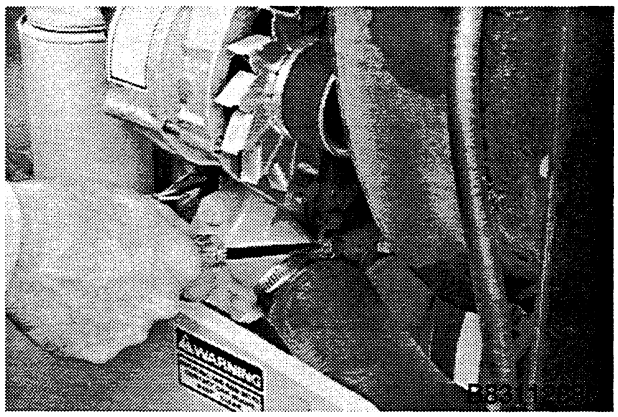
Disconnect the hose from the left side of the transmission oil cooler.

STEP 28



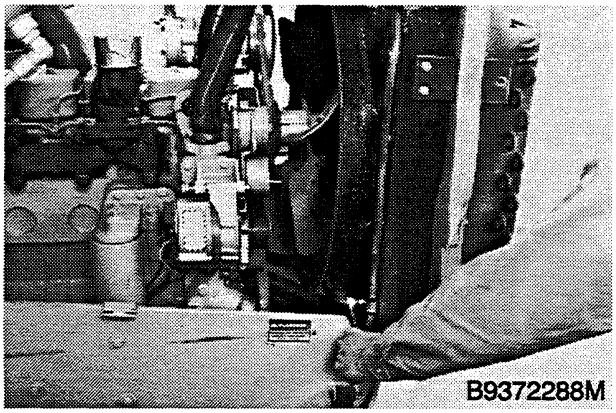
Install plugs in the hoses and caps on the fittings.

STEP 35



Loosen the clamp and disconnect the bottom radiator hose from the water pump.

STEP 36



Loosen and remove the cap screws, lock washers, and flat washers that hold the clamps for the hoses and the fan shroud to each side of the radiator. Move the hoses out of the way and move the fan shroud toward the engine.

If the machine is equipped with air conditioning, do the following:

Remove the hardware that fastens the condenser and oil cooler to the radiator.

Move the condenser to the LH side out of the way.

Disconnect the two wire connectors at the compressor.

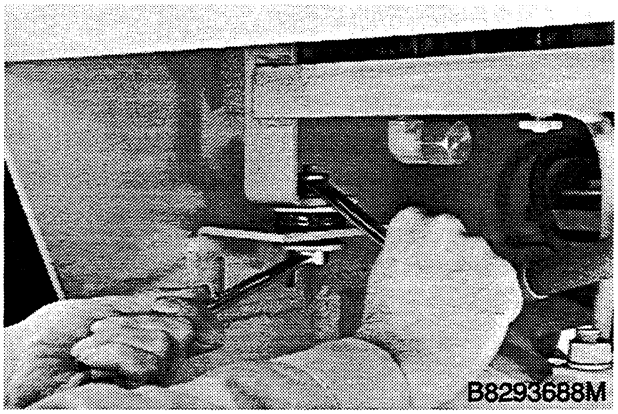
Remove all clamps and tie straps that fasten the condenser, compressor, and receiver/drier hoses to the engine and other hoses and tubes.

Remove the hardware that fastens the compressor to the mounting bracket, then remove the drive belt and lay the compressor over the side of the frame.

Remove the clamp that fastens the receiver/drier to the LH side of the engine and lay the receiver/drier over the side of the frame.

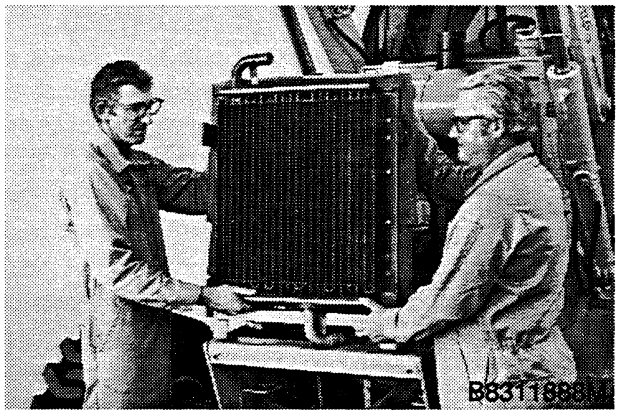
NOTE: *If the air conditioning system must be broken, see Section 9002 for discharging the air conditioning system.*

STEP 37



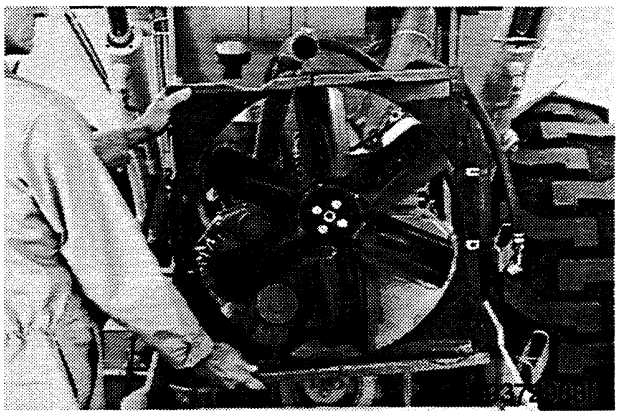
Loosen and remove the nuts, lock washers, flat washers, and bolts that fasten the support for the radiator and oil cooler.

STEP 38



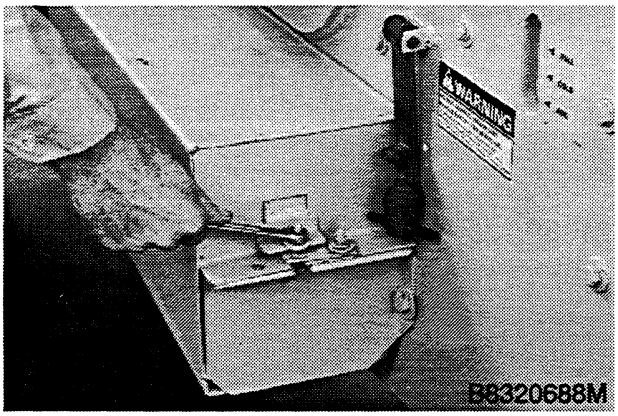
Remove the radiator and oil cooler from the machine.

STEP 39



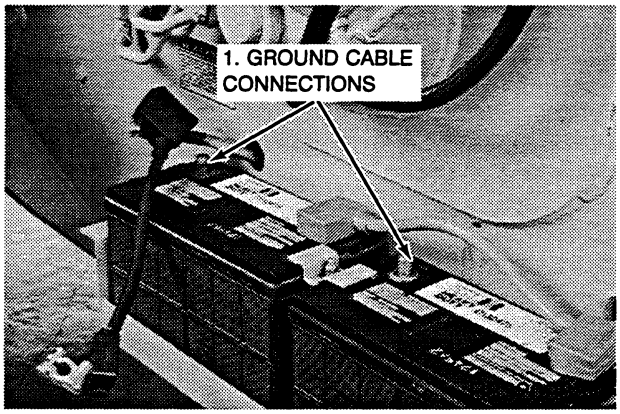
Remove the fan shroud.

STEP 40



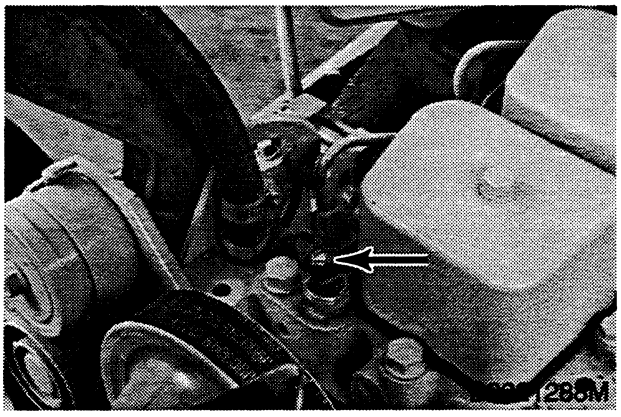
Loosen the nuts that hold the cover for the batteries in place. Remove the cover.

STEP 41



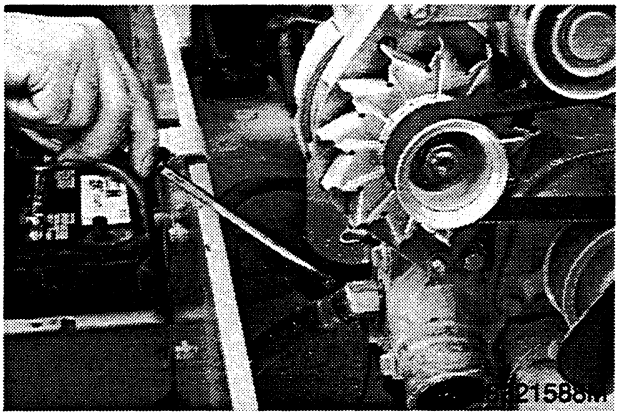
Disconnect the ground cable from both batteries.

STEP 42



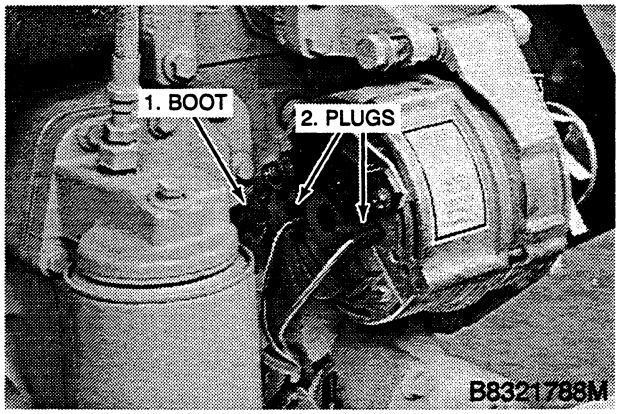
Disconnect wire from the temperature switch. Cut the tie strap that fastens the wire for the temperature switch.

STEP 43



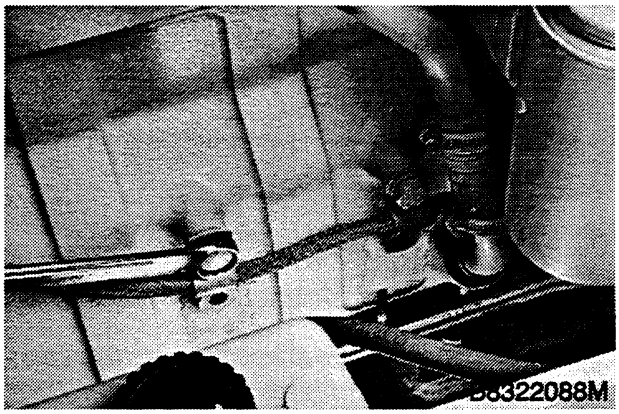
Loosen the clamp on the heater hose and disconnect the hose. Install a plug in the hose.

STEP 44



Remove the boot and disconnect the wire and both plugs from the alternator.

STEP 45



Loosen and remove the cap screws and lock washers that fasten the clamps for the wire harness to the engine.