9060B Excavator
Service Manual No. 7-65272

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Reprinted

CASE CORPORATION
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Bur 7-52711

9060B Excavator
Service Manual No. 7-65272

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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

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* Products 404-496 (except for #445) are all instant adhesives (super glues) they differ mostly in viscosity

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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

1001

SAFETY, GENERAL INFORMATION AND TORQUE SPECIFICATIONS

CASE CORPORATION

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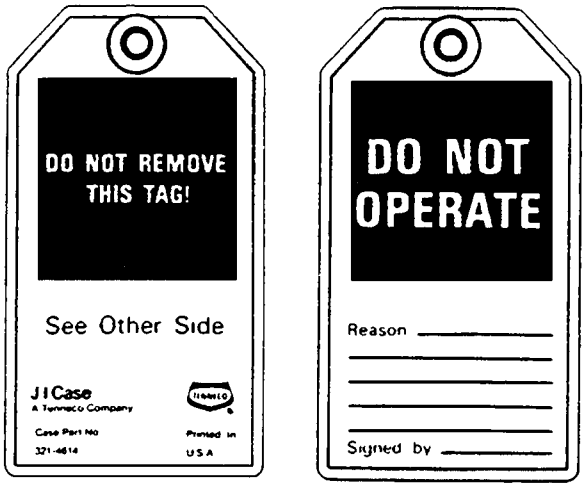
SAFETY

This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death. SB001

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the warning tag shown below on the key for the keyswitch when servicing or repairing the machine. One warning tag is supplied with each machine. Additional tags Part Number 331-4614 are available from your service parts supplier.



1001-01

WARNING: *Read the operator's manual to familiarize yourself with the correct control functions.* 46-27

WARNING: *Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.* 48-55

WARNING: *This is a one man machine, no riders allowed.* 35-8

WARNING: *Before starting engine, study Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.*
It is your responsibility to understand and follow manufacturers instructions on machine operation, service and to observe pertinent laws and regulations. Operator's and Service Manuals may be obtained from your Case dealer. SA055

WARNING: *If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.* 45-3A

WARNING: *When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.* 35-4

WARNING: *When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.* 47-44

WARNING: *When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.* 47-45

WARNING: *Use insulated gloves or mittens when working with hot parts.* 47-41A

CAUTION: *Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.* 49-11

CAUTION: *Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. If hydraulic oil under pressure does penetrate the skin, seek medical treatment immediately. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Make a replacement of any tube or hose that is damaged or thought to be damaged. DO NOT use your hand to check for leaks, use a piece of cardboard or wood.* 40-6A

CAUTION: *When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.* 46-17

CAUTION: *When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).* 46-13

CAUTION: *Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands.* 40-7A

CAUTION: *When servicing or repairing the machine, keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and/or shop cloths as required. Use safe practices at all times.* 40-8

CAUTION: *Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this Service Manual.* 40-10

DANGER: *Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the doors and get outside air into the area.* 48-56

WARNING: *When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.* SA033

GENERAL INFORMATION

CLEANING

Clean all metal parts except bearings, in a suitable cleaning solvent or by steam cleaning. Do not use caustic soda for steam cleaning. After cleaning, dry and put oil on all parts. Clean oil passages with compressed air. Clean bearings in a suitable cleaning solvent, dry the bearings completely and put oil on the bearings.

INSPECTION

Check all parts when the parts are disassembled. Replace all parts that have wear or damage. Small scoring or grooves can be removed with a hone or crocus cloth. Complete a visual inspection for indications of wear, pitting and the replacement of parts necessary to prevent early failures.

BEARINGS

Check bearings for easy action. If bearings have a loose fit or rough action replace the bearing. Wash bearings with a suitable cleaning solvent and permit to air dry. DO NOT DRY BEARINGS WITH COMPRESSED AIR.

NEEDLE BEARINGS

Before you press needle bearings in a bore always remove any metal protrusions in the bore or edge of the bore. Before you press bearings into position put petroleum jelly on the inside and outside diameter of the bearings.

GEARS

Check all gears for wear and damage. Replace gears that have wear or damage.

OIL SEALS, O-RINGS AND GASKETS

Always install new oil seals, O-rings and gaskets. Put petroleum jelly on seals and O-rings.

SHAFTS

Check all shafts that have wear or damage. Check the bearing and oil seal surfaces of the shafts for damage.

SERVICE PARTS

Always install genuine Case service parts. When ordering refer to the Parts Catalog for the correct part number of the genuine Case replacement items. Failures due to the use of other than genuine Case replacement parts are not covered by warranty.

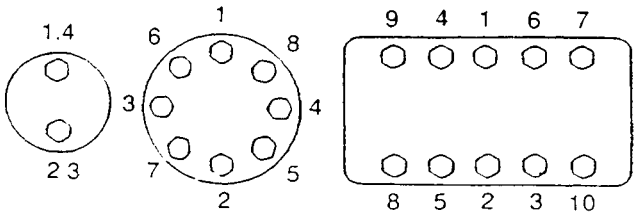
LUBRICATION

Only use the oils and lubricants specified in the Operator's or Service Manuals. Failures due to the use of non-specified oils and lubricants are not covered by warranty.

STANDARD TORQUE DATA FOR CAP SCREWS AND NUTS

TIGHTENING OF CAP SCREWS, NUTS

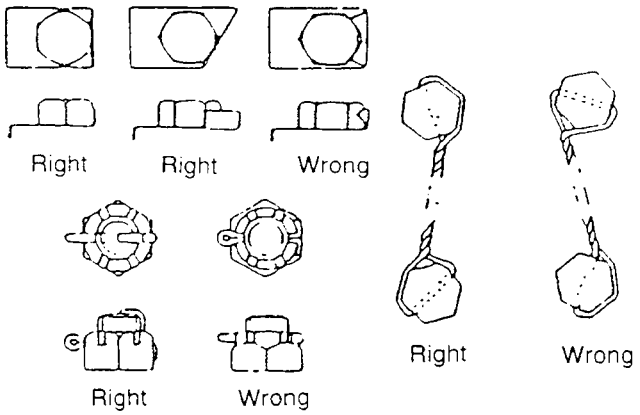
Tighten alternately so that tightening torque can be applied evenly. The numbers in the figure below indicate the order of tightening.



1001-02

Apply engine oil to the thread portion of the cap screw so that uniform tightening torque is obtained.

The cap screws and nuts that cannot be inspected externally or those as indicated in the assembly/installation sections should be saftied with lockwire, cotter pin or bent washer.



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Cap screws which have had Loctite used (white residue remains after removal) should be cleaned with light oil or suitable cleaning solvent and dried. Apply 2-3 drops of Loctite to the thread portion of the cap screw and then tighten.

TORQUE TABLE

Tighten cap screws and nuts according to the table below if there are no other special instructions.

Cap Screw Name Size (Size)			M6	M8	M10	M12	M14	M16	M18	M20
Cap Screw	Spanner	[mm]	10	13	17	19	22	24	27	30
		[in.]	0.39	0.51	0.67	0.75	0.87	0.95	1.06	1.18
	Tightening torque	[Nm]	6.9	15.7	32.3	58.8	98.0	137.2	196.0	274.0
		[lb-ft]	5.1	11.6	23.9	43.4	72.3	101.2	144.6	202.4
Socket Head Cap Screw	Spanner	[mm]	5	6	8	10	12	14	14	17
		[in.]	0.20	0.24	0.32	0.39	0.47	0.55	0.55	0.67
	Tightening torque	[Nm]	8.8	21.6	42.1	78.4	117.6	176.4	245.0	343.0
		[lb-ft]	6.5	15.9	31.1	57.8	86.8	130.1	180.8	253.1

Section

1002

SPECIFICATIONS

CASE CORPORATION

Rac 7-65330

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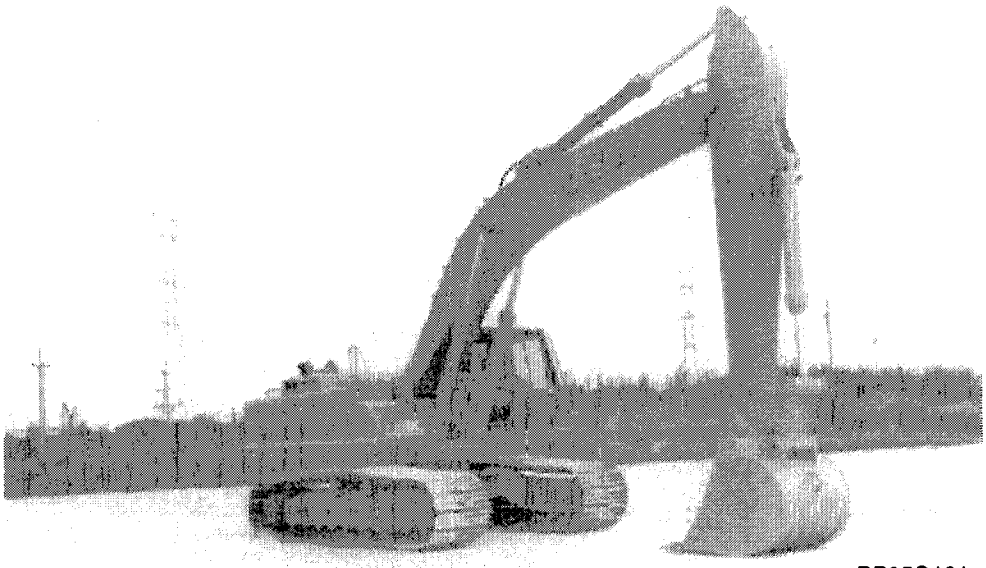
IMPORTANT: *This engine was made by using the metric system. All measurements and checks must be made with metric tools to make sure of accurate readings when inspecting parts.*

MODEL AND PIN NUMBERS

When ordering parts or when requesting information or assistance, always give the identification numbers of your machine. Write the model and PIN numbers of your machine on the lines below.



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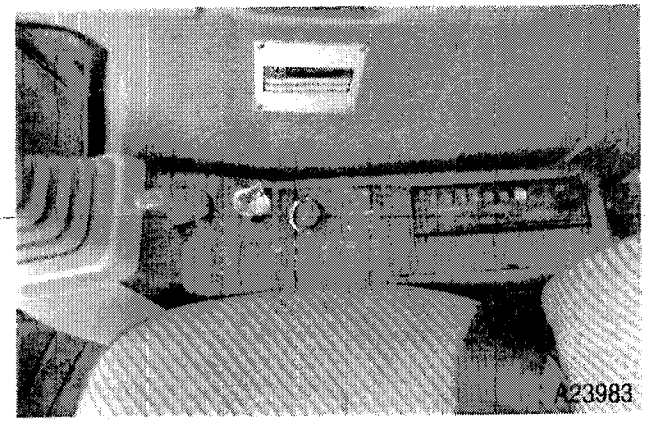

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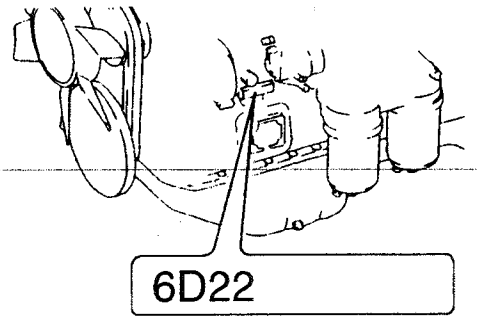

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Machine Model Number _____

Machine PIN Number _____

Engine Serial Number _____

GENERAL SPECIFICATIONS

Capacities

Engine Crank Case Capacity	29 liters	7.7 US gallons
Engine Cooling System	49 liters	13 US gallons
Fuel Tank	650 liters	172 US gallons
Hydraulic Oil Tank Capacity	210 liters	55.5 US gallons
Total Hydraulic System Capacity	450 liters	119 US gallons
Final Drive Case Capacity	7 liters	1.8 US gallons
Swing Drive Case Capacity	21 liters	5.5 US gallons
Track Front Idlers	960 to 980 cc	31.7 to 32.3 oz
Track Lower Rollers	530 to 540 cc	17.5 to 17.8 oz
Track Upper Roller	690 to 700 cc	22.8 to 23.1 oz

NOTE: ***These capacities are only a guide to the quantities. Always use the dipstick, sight gauges or level plug to make sure that fluid levels are correct.***

Drawbar Pull

Drawbar Pull	32195 kg	70989 lb

Drive Speed

Drive Speed: High	5.0 km/h	3.1 mph
Drive Speed: Middle	3.1 km/h	1.9 mph
Drive Speed: Low	2.2 km/h	1.4 mph

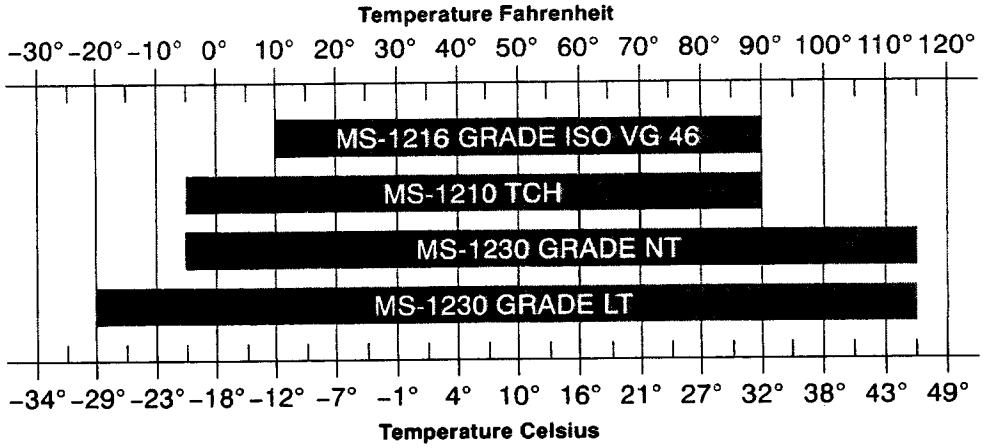
Electrical System

Type of System	24 volts negative ground
Alternator	
Manufacturer	Mitsubishi Electric Corp.
Output	40 amperes
Batteries	
Number of batteries required	2
Voltage of each battery	12 volts
Reserve capacity	160 minutes
Cold cranking capacity at -17°C (0°F)	800 amperes
Load for capacity (load) test	400 amperes
Starter Motor	
Manufacturer	Mitsubishi Electric Corp.
Voltage	24 volts

Fluids and Lubricants

Batteries	add drinking or distilled water
Engine Coolant Solution	refer to page 12
Engine Lubrication	refer to page 12
Fuel	refer to entry on page 5
Hydraulic System	refer to the following Hydraulic Fluid Chart
Final Drive Lubricant	API GL-4, SAE 90
Swing Drive Case Lubricant	API GL-4, SAE 90
Track Roller and Front Idler Lubricant	Case No. 1 Single Grade engine oil SAE 30
Turntable Ring Gear Lubricant	No. 2 EP lithium grease
Grease Fitting Lubricant	No. 2 EP lithium grease

Use only hydraulic oils meeting Case specifications or equivalent AW (anti-wear) hydraulic oils.



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NOTE: *Case specification MS-1210 TCH Fluid is used in place of ISO VG 32 (-5 to +65 F) and ISO VG 46 (+10 to +90 F).*

Case specifications MS-1230 Grade NT or Grade LT is used in place of SO VG 32 (-5 to +65 F), ISO VG 46 (+10 to +90 F), ISO VG 100 (+30 to +115 F), and MS-1210 TCH.

Hydraulic Fluid Chart

Fuel

Use Number Two Diesel fuel having a grade of ASTM D 975-Grade 2-D.

Hydraulic System

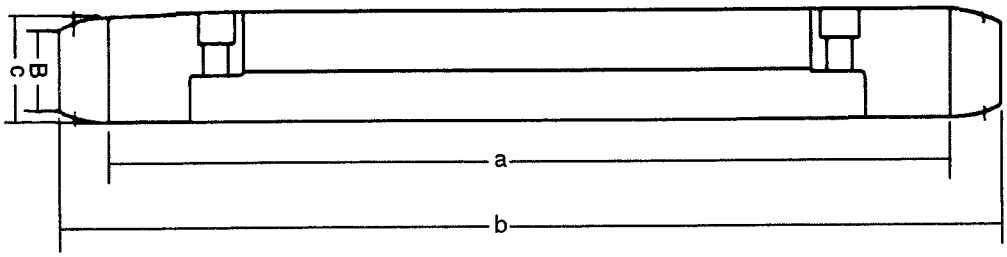
Hydraulic Pump

Uchida A8V172ESBR6, 201F2-995-0 (KTJ1172)

Displacement	170 cm^3/rev x 2	10.37 in^3/rev x 2
Speed		2000 RPM
Maximum Flow	340 l/min	89.9 gpm

Tracks, Rollers and Idlers

Lower Mechanism (with standard 900 mm grouser shoe)			
Total Length		5285 mm	17 ft 4.1 in.
Total Width		3650 mm	11 ft 11.7 in.
Total Weight (approximate)		17390 kg	38338 lb
Drive Sprocket			
Sprocket:	a standard value	89 mm	3.5 in.
	service limit	83 mm	3.27 in.
	b standard value	890 ± 2 mm	35.039 ± 0.078 in.
	service limit	884 ± 2 mm	34.803 ± 0.078 in.
	c standard value	89 mm	3.50 in.
	service limit	83 mm	3.27 in.
	B standard value	65 mm	2.56 in.
	service limit	—	—



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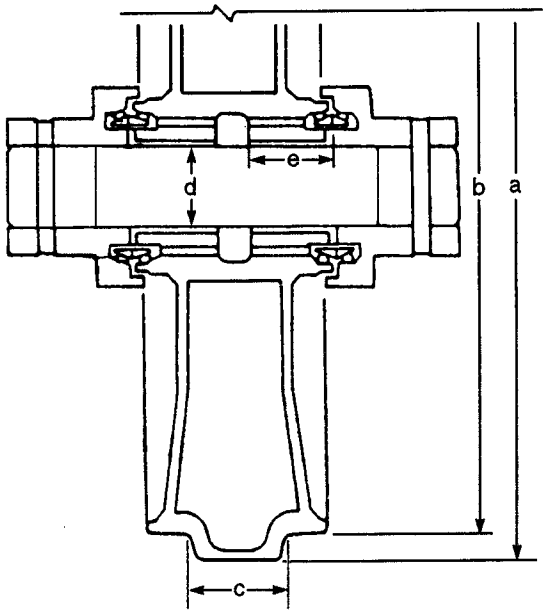
Drive Sprocket

Take-Up Roller

Take-Up Roller:	a	standard value	750 mm	29.5 in.
		service limit	744 mm	29.3 in.
	b	standard value	710 mm	27.9 in.
		service limit	706 mm	27.8 in.
	c	standard value	102 mm	4.01 in.
		service limit	98 mm	3.86 in.
Shaft:	d	standard value	101.6 mm	4.0 in.
		service limit	100.6 mm	3.96 in.
Bushing:	d	standard value	101.6 mm	4.0 in.
		service limit	102.6 mm	4.04 in.
	e	standard value	90 mm	3.54 in.
		service limit	89 mm	3.50 in.



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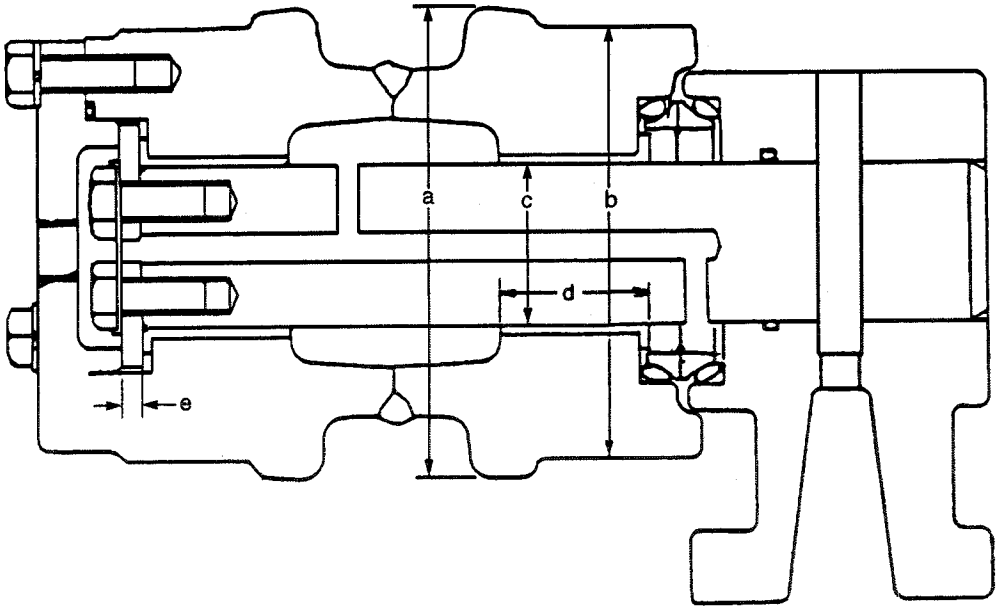
Take-Up Roller

Upper Roller				
Carrier Roller:	a	standard value	175 mm	6.88 in.
		service limit	168 mm	6.61 in.
	b	standard value	145 mm	5.70 in.
		service limit	140 mm	5.51 in.
Shaft:	c	standard value	60 mm	2.36 in.
		service limit	59 mm	2.32 in.
Bushing:	c	standard value	60 mm	2.36 in.
		service limit	61 mm	2.40 in.
Bushing:	d	standard value	57.5 mm	2.26 in.
		service limit	—	—
Thrust Plate:	e	standard value	5.5 mm	0.21 in.
		service limit	5 mm	0.197 in.



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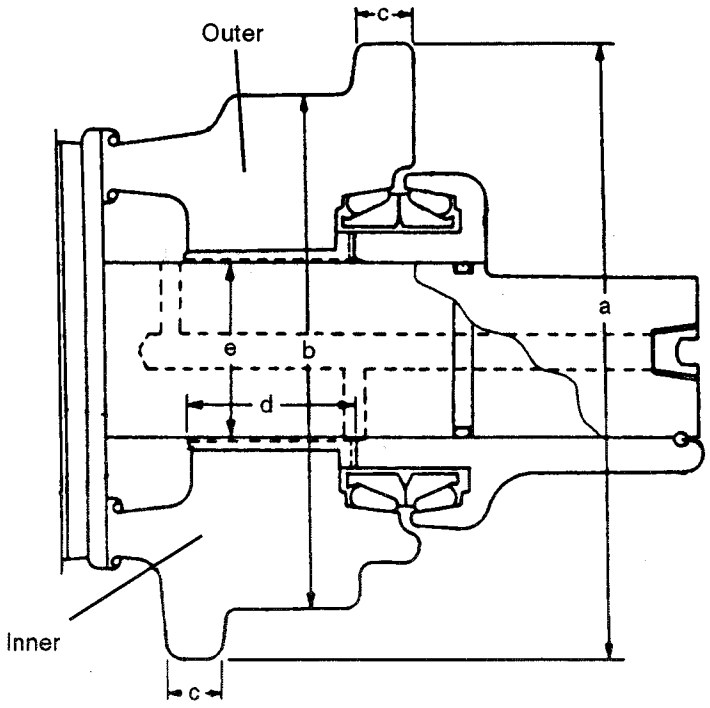
Upper Roller

Lower Roller (Inside and Outside)				
Track Roller:	a	standard value	240 mm	9.45 in.
		service limit	235 mm	9.25 in.
	b	standard value	200 mm	7.87 in.
		service limit	195 mm	7.68 in.
	c	standard value	26 mm	1.02 in.
		service limit	25 mm	0.98 in.
Bushing:	d	standard value	85 mm	3.34 in.
		service limit	—	—
Shaft:	e	standard value	85 mm	3.34 in.
		service limit	84 mm	3.31 in.
Bushing:	e	standard value	85.3 mm	3.35 in.
		service limit	86.3 mm	3.40 in.



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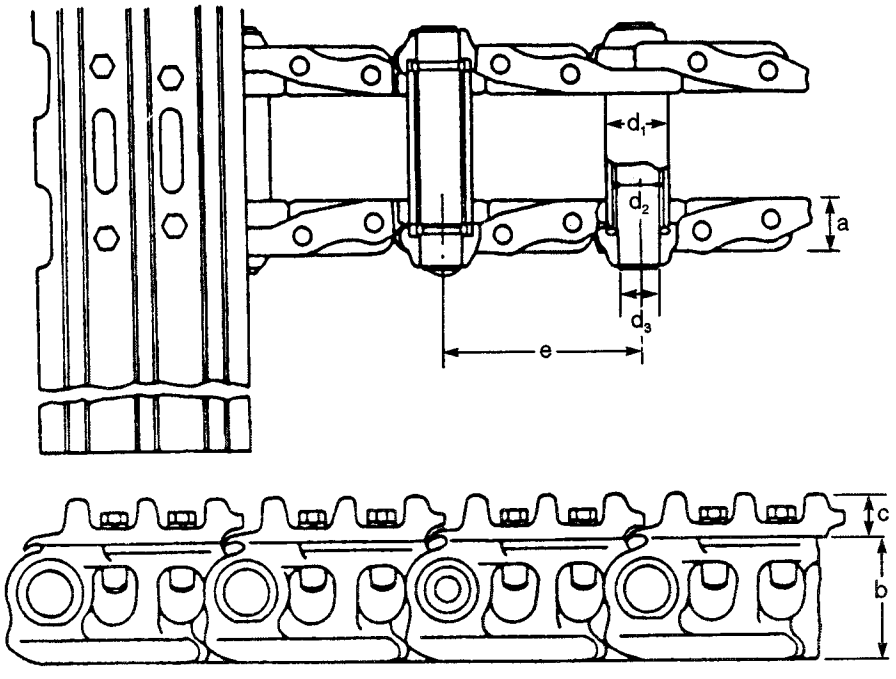
Lower Roller (Inside and Outside)

Track Shoe (Grouser Shoe)

Link:	a	standard value	71.1 mm / 2.80 in.
		service limit	67 mm / 2.64 in.
	b	standard value	129 mm / 5.0 in.
		service limit	122 mm / 4.80 in.
Track Shoe	c	standard value	57 mm / 2.23 in.
		service limit	36 mm / 1.42 in.
Track Bushing:	d_1	standard value	71.35 mm / 2.80 in.
		service limit	65 mm / 2.56 in.
	d_2	standard value	47.97 mm / 1.88 in.
		service limit	49.5 mm / 1.95 in.
Pin:	d_3	standard value	47.57 mm / 1.86 in.
		service limit	46.3 mm / 1.82 in.
Link Pitch:	e	standard value	215.9 mm / 8.48 in.
		service limit	218.5 mm / 8.6 in.



JS01715A

Track Shoe (Grouser Shoe)

ENGINE COOLING AND LUBRICATION SPECIFICATIONS

Engine Cooling System

Coolant Solution ..... 45% Water and 55% Ethylene Glycol

IMPORTANT: *When using ethylene glycol solutions, always have a minimum of 55% ethylene glycol in the system. Do not put more than 55% ethylene glycol in the cooling system unless the ambient air temperature will be less than -37°C (-34°F). If the air temperature is less than -37°C (-34°F), add additional ethylene glycol according to the manufacturer's instructions.*

Thermostat ..... Starts to open at 83°C (181°F)
Fully open at 95°C (203°F)

Radiator Cap ..... 0.48 Bar (7 psi)

Engine Lubrication

Engine Oil Type

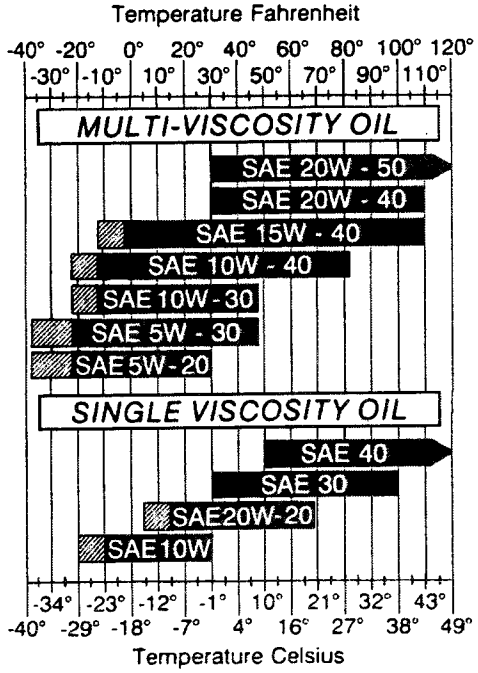
Case No. 1 engine oil is recommended for use in the Case engine. Case engine oil will lubricate the engine under all operating conditions. If Case No. 1 Multi-Viscosity engine oil is not available, Case No. 1 Single Grade engine oil can be used.

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

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

NOTE: *DO NOT put performance additives or other oil additive products into the engine crankcase.*

Engine Lubrication Oil Viscosity/Temperature Ranges



NOTE: *Use of an engine oil pan heater or an engine coolant heater is required when the operating temperatures (shown in the chart on the left) are in the cross-hatched area.*

JS01437A

Weights

Operating Weight		
With 8 ft 3 in. (2.5 m) arm	44985 kg	98967 lb
With 11 ft (3.36 m) arm	45147 kg	99324 lb
With 13 ft 1 in. (4.00 m) arm	45431 kg	99950 lb
With 17 ft 8 in. (5.4 m) arm)	45895 kg	100969 lb
Counterweight	8665 kg	19065 lb
Engine	1020 kg	2249 lb
Turntable Bearing	457 kg	1008 lb
Attachments		
Boom with Cylinder	4870 kg	10736 lb
Arm with Links and Cylinder	1413 kg	3115 lb
Cylinders		
Boom Cylinder (each)	388 kg	855 lb
Arm Cylinder	581 kg	1281 lb
Bucket Cylinder	346 kg	763 lb

Buckets

Bucket Width	Number of Teeth	Weight	Capacity SAE Heaped
Heavy Duty			
36 inch (914 mm)	4	2890 lbs (1314 kg)	1.66 yd^3 (1.27 m^3)
42 inch (1067 mm)	5	3125 lbs (1420 kg)	1.85 yd^3 (1.41 m^3)
48 inch (1219 mm)	6	3320 lbs (1509 kg)	2.15 yd^3 (1.64 m^3)
54 inch (1372 mm)	6	3580 lbs (1627 kg)	2.45 yd^3 (1.87 m^3)
60 inch (1524 mm)	7	3770 lbs (1714 kg)	2.74 yd^3 (2.09 m^3)
72 inch (1829 mm)	8	3870 lbs (1759 kg)	3.29 yd^3 (2.52 m^3)
Heavy Duty, High Capacity			
36 inch (914 mm)	4	3705 lbs (1684 kg)	1.96 yd^3 (1.50 m^3)
42 inch (1067 mm)	4	4180 lbs (1900 kg)	2.32 yd^3 (1.77 m^3)
48 inch (1219 mm)	5	4460 lbs (2027 kg)	2.69 yd^3 (2.06 m^3)
54 inch (1372 mm)	5	4780 lbs (2173 kg)	3.06 yd^3 (2.34 m^3)
60 inch (1524 mm)	6	5210 lbs (2368 kg)	3.43 yd^3 (2.62 m^3)
72 inch (1829 mm)	7	5910 lbs (2686 kg)	4.17 yd^3 (3.19 m^3)
Severe Duty			
42 inch (1067 mm)	4	3125 lbs (1420 kg)	1.85 yd^3 (1.41 m^3)
48 inch (1219 mm)	5	3320 lbs (1509 kg)	2.15 yd^3 (1.64 m^3)
54 inch (1372 mm)	5	3720 lbs (1691 kg)	2.45 yd^3 (1.87 m^3)

NOTE: *6 inch (152 mm) side cutter blades are available for the above buckets. The side cutter blades add 6 inches (152 mm) to the width of each bucket.*

GENERAL ENGINE SPECIFICATIONS

General

Make and Model		Mitsubishi 6D22TC
Type		6 cylinder, turbocharged 4 stroke cycle
Horsepower	289 hp at 2000 rpm	215 kw at 2000 rpm
Firing Order		1, 5, 3, 6, 2, 4
Bore and Stroke	130 mm x 140 mm	5.12 in. x 5.51 in.
Piston Displacement	11.15 liters	680 in^3
Compression Ratio		16 to 1
Engine Speeds		
Full Throttle - Full Load		1650 rpm
Engine Idle Speed		890 rpm

Pistons and Connecting Rods

Rings per Piston	3
Number of Compression Rings	2
Number of Oil Rings	1

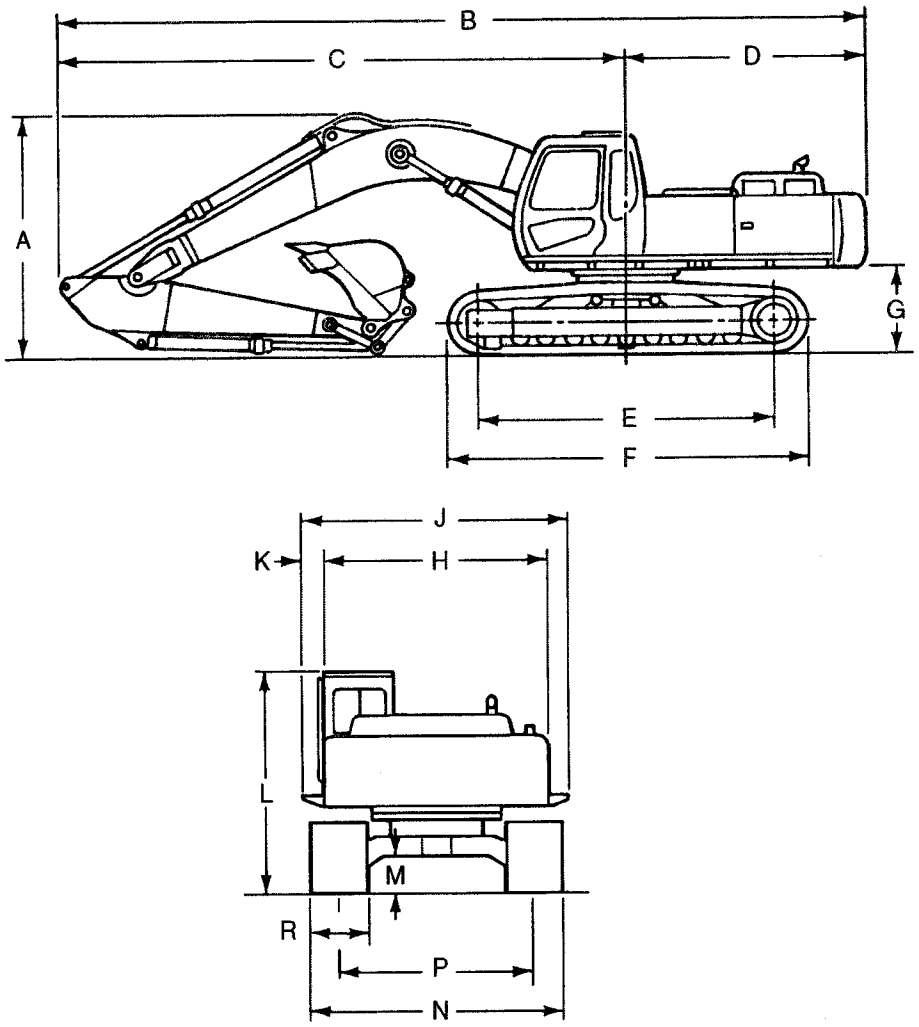
Main Bearings

Number of Bearings	7
Type of Bearings	Replaceable

Engine Lubricating System

Type of System		Pressure and Spray Lubrication
Oil Pressure (when engine warm and operating at rated speed)	2.97 to 4.89 Bar	43 to 71 psi
Oil Pump		Gear Type
Oil Filters		
Quantity		2
Type		Full Flow and Bypass
Oil Capacity		
(with filter change)	29.3 liters	31 US quarts
(without filter change)	24.8 liters	26 US quarts

9060B TRANSPORTING DIMENSIONS



JS01436A

A	Overall height of machine with attachment on the ground	
	with 11 ft (3.36 m) arm	11 ft 3 in. (3.43 m)
	with 13 ft 1 in. (4.0 m) arm	11 ft 4 in. (3.46 m)
	with 17 ft 8 in. (5.40 m) arm	15 ft 8 in. (4.78 m)
B	Overall length of machine in TRANSPORT position	
	with 11 ft (3.36 m) arm	39 ft 2 in. (11.95 m)
	with 13 ft 1 in. (4.0 m) arm	39 ft 3 in. (11.96 m)
	with 17 ft 8 in. (5.40 m) arm	38 ft 10 in. (11.84 m)
C	Length from swing pivot to end of arm - arm in TRANSPORT position	
	with 11 ft (3.36 m) arm	27 ft 6 in. (8.38 m)
	with 13 ft 1 in. (4.0 m) arm	27 ft 6 in. (8.38 m)
	with 17 ft 8 in. (5.40 m) arm	27 ft 2 in. (8.28 m)
D	Tail swing radius	11 ft 9 in. (3.57 m)
E	Length between centerlines of idler and drive sprocket	13 ft 11 in. (4.26 m)
F	Track overall length	17 ft 4 in. (5.28 m)
G	Clearance height of upper structure	4 ft 5 in. (1.35 m)
H	Overall width of upper structure	9 ft 10 in. (2.99 m)
J	Overall width of upper structure, including catwalk	11 ft 10 in. (3.6 m)
K	Width of each catwalk	12 in. (305 mm)
L	Height to top of cab	10 ft 10 in. (3.30 m)
M	Minimum ground clearance	1 ft 10 in. (550 mm)
N	Track overall width - with 35.4 in. (900 mm) shoes	12 ft (3.65 m)
		9 ft (2.74 m)
P	Track gauge	35.8 in. (910 mm)
R	Standard track plate width	

2000

Section 2000

ENGINE

CASE CORPORATION

Rac 7-65380

Printed in U.S.A.
November 1995

TABLE OF CONTENTS

SPECIFICATIONS

Weight of the engine ..... 2249 pounds (1020 kg)

SPECIAL TORQUES

Cap screws that hold the engine mounts to the frame ..... 215 to 245 lb-ft (290 to 335 Nm)
(Apply Loctite 262 on the threads of the cap screws)

ENGINE

Removal

NOTE: *Make sure engine is cool before starting removal procedures.*

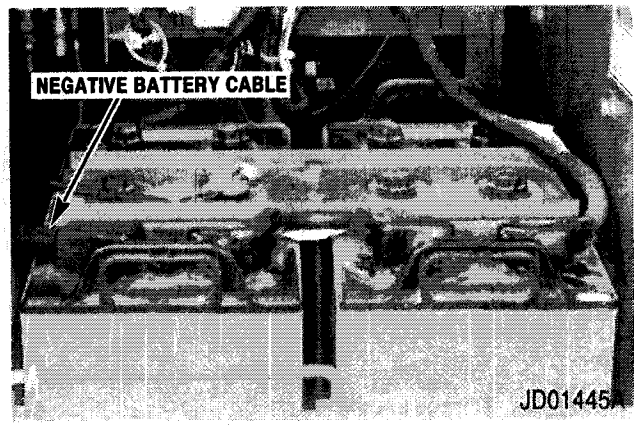
STEP 1

Remove the hydraulic pump (see Section 8002).

STEP 2

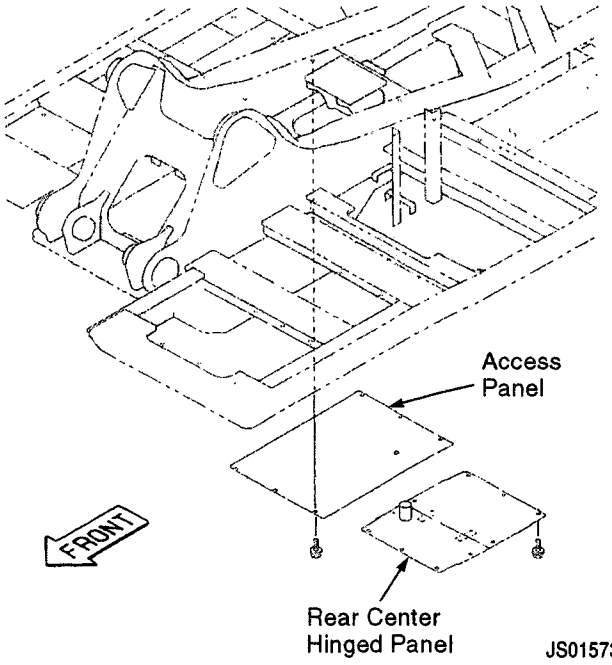
Remove the radiator, oil cooler, and the cooling system reservoir (see Section 2001).

STEP 3



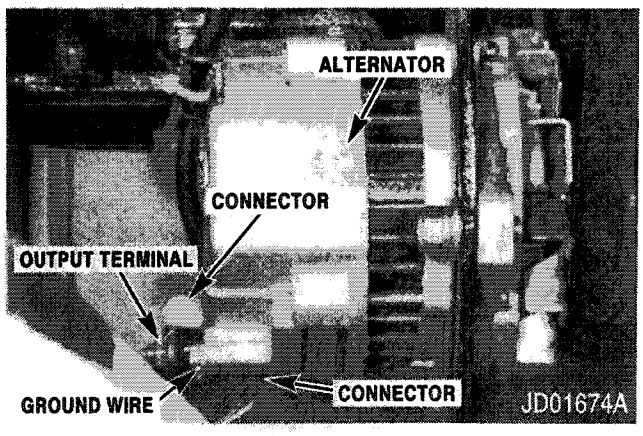
Open the left side access doors. Disconnect the negative battery cable from the battery.

STEP 4



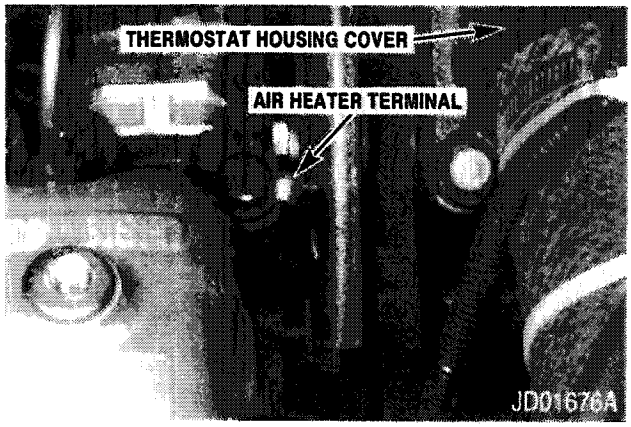
Remove the bottom right rear access panel. Remove the five cap screws securing the rear center hinged panel below the engine. Swing the panel down for access to the engine two left mounts.

STEP 5



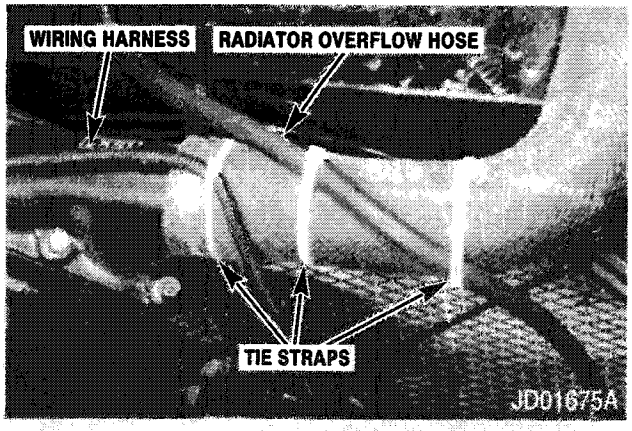
Tag and disconnect the two wiring harness connectors and the ground wire from the alternator. Tag and disconnect the wiring harness wire connected to the alternator output terminal.

STEP 6



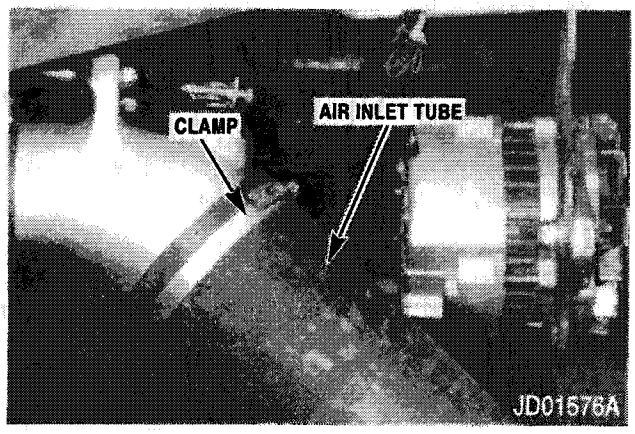
Tag and disconnect the wiring harness wire from the air heater terminal.

STEP 7



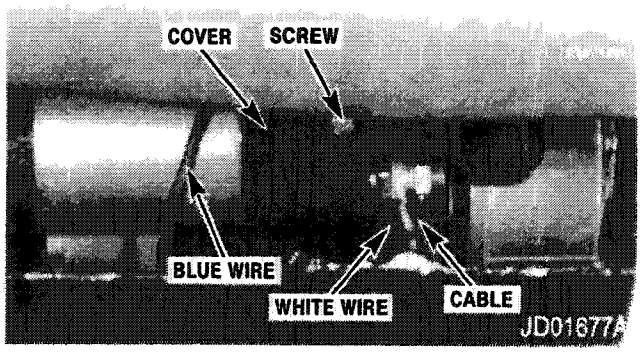
Cut, remove, and discard the three tie straps holding the wiring harness and the radiator overflow hose to the radiator hose.

STEP 8



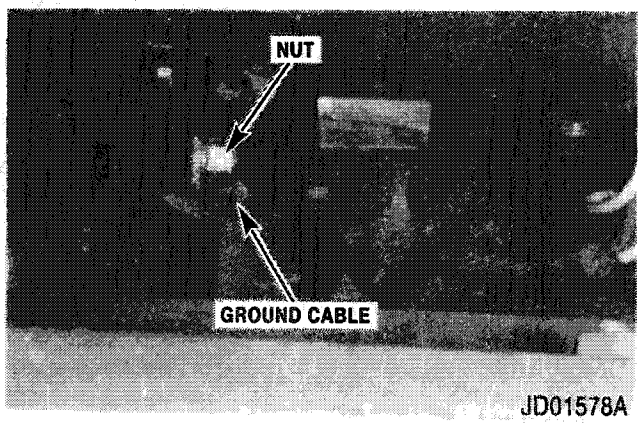
Loosen the clamp securing the air inlet tube to the turbocharger. Disconnect the air inlet tube.

STEP 9



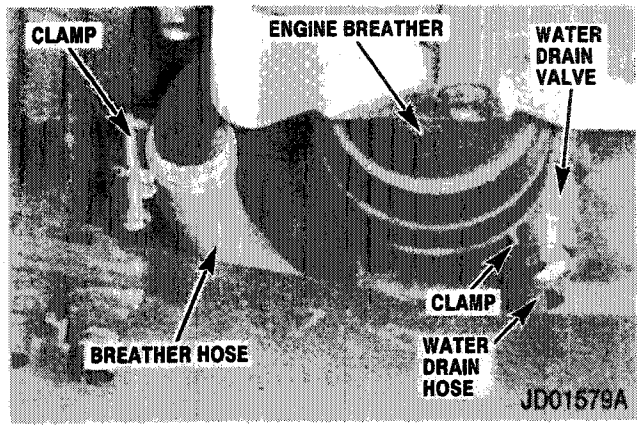
Remove the screw, flat washer, and lock washer and remove the cover. Tag and disconnect the wiring harness blue wire from the starter assembly terminal. Tag and disconnect the wiring harness white wire and the cable from the starter assembly.

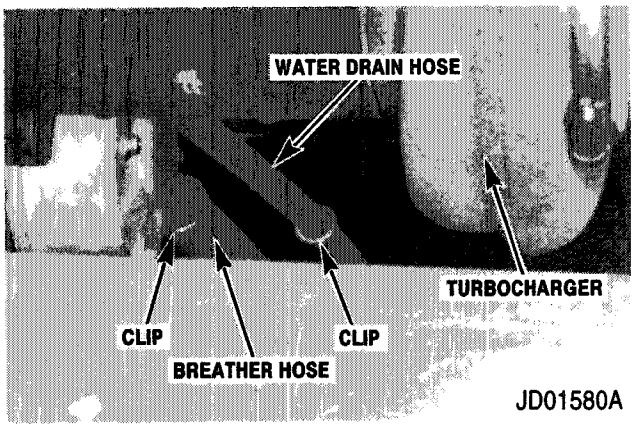
STEP 10



Remove the nut and lock washer. Disconnect the ground cable from the engine.

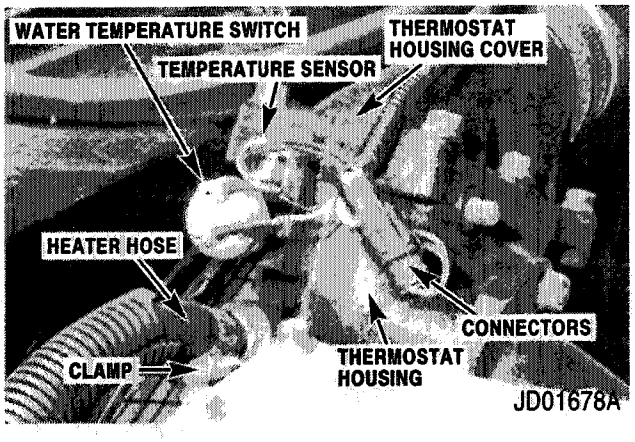
STEP 11





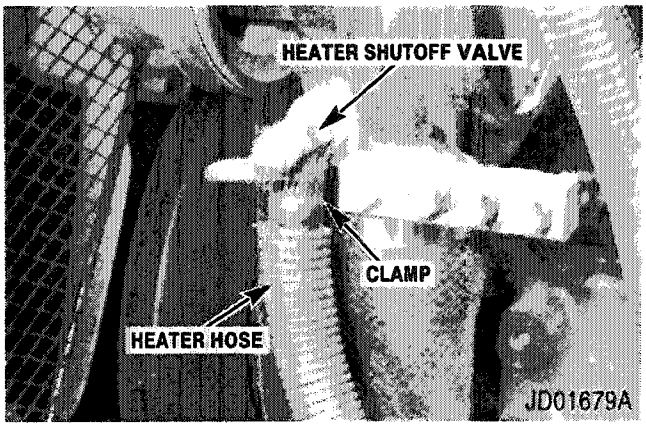
Loosen the clamp securing the breather hose and disconnect the breather hose. Using pliers, remove the clamp from the water drain hose connected to the water drain valve. Disconnect the water drain hose. Pull the hoses from the clips installed on the engine.

STEP 12



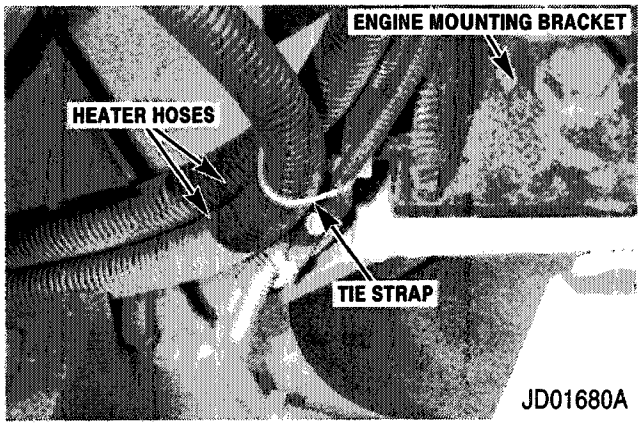
Disconnect the temperature sensor connector from the wiring harness connector. Tag and disconnect the wiring harness two wires from the water temperature switch. Loosen the clamp and disconnect the heater hose from the fitting installed in the thermostat housing.

STEP 13



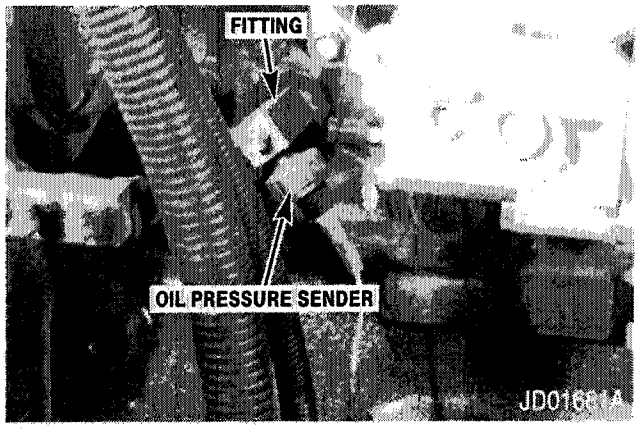
Loosen the clamp securing the heater hose to the heater shutoff valve. Disconnect the hose from the heater shutoff valve.

STEP 14



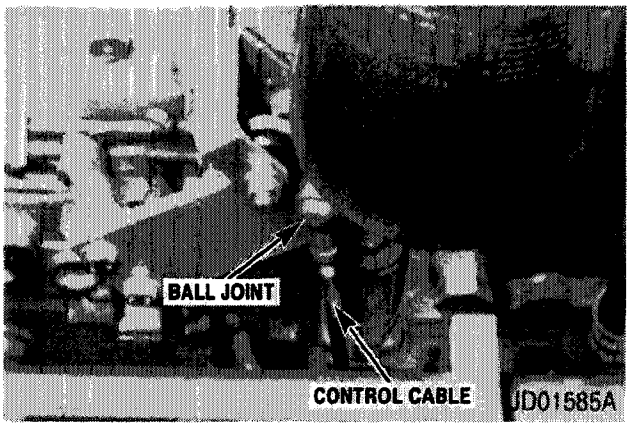
Cut, remove, and discard the tie strap holding the two heater hoses and the wiring harness to the engine mounting bracket.

STEP 15



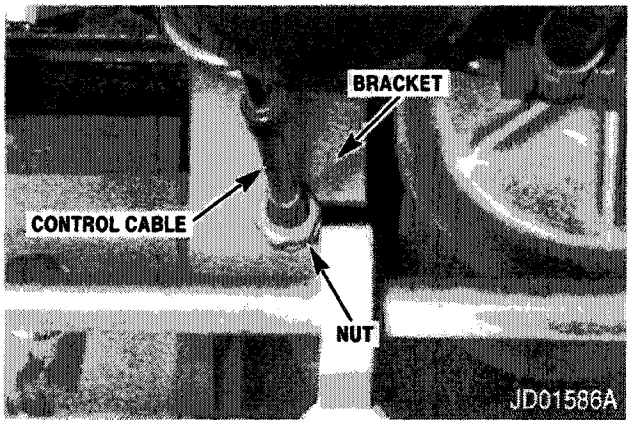
Tag and disconnect the wiring harness wire connected to the oil pressure sender.

STEP 16



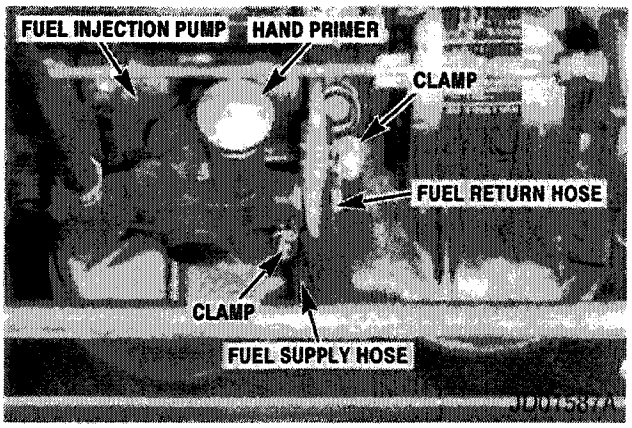
Remove the nut and lock washer securing the control cable ball joint to the fuel injection pump throttle bracket. Disconnect the ball joint.

STEP 17



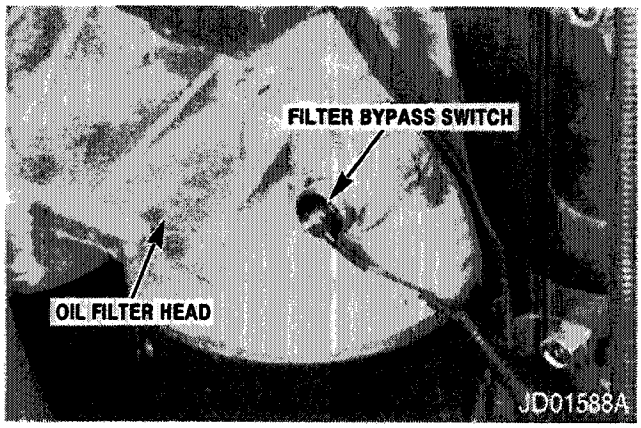
Loosen the two nuts securing the control cable to the bracket. Remove the control cable from the bracket.

STEP 18



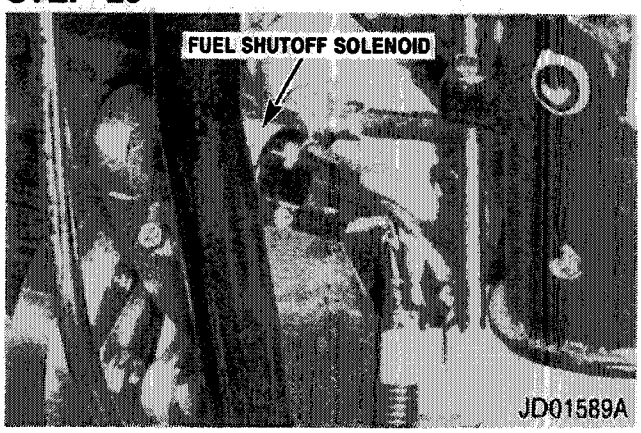
Tag the fuel supply hose and the fuel return hose. Loosen the two clamps and disconnect the hoses.

STEP 19



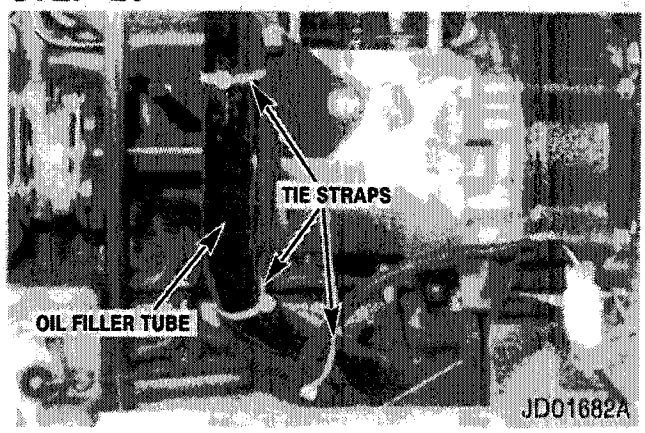
Tag and disconnect the wiring harness wire connected to the filter bypass switch.

STEP 20



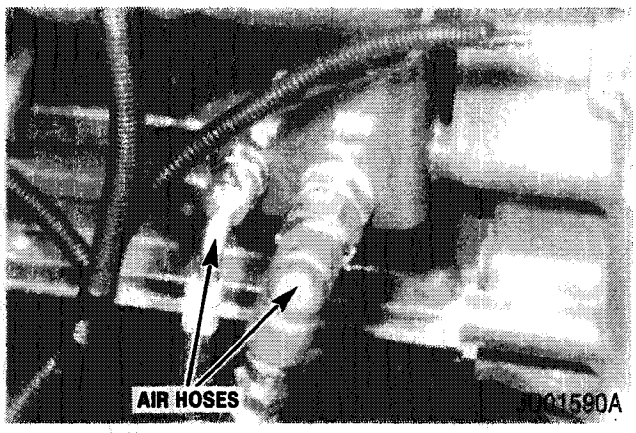
Tag and disconnect the wiring harness two wires connected to the fuel shutoff solenoid.

STEP 21



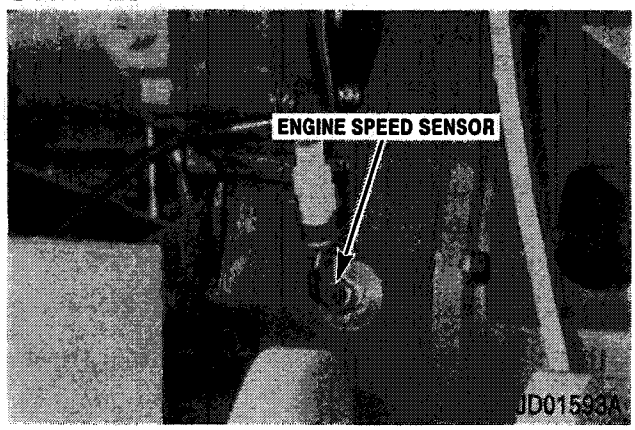
Cut, remove, and discard the three tie straps securing the wiring harness to the oil filler tube.

STEP 22



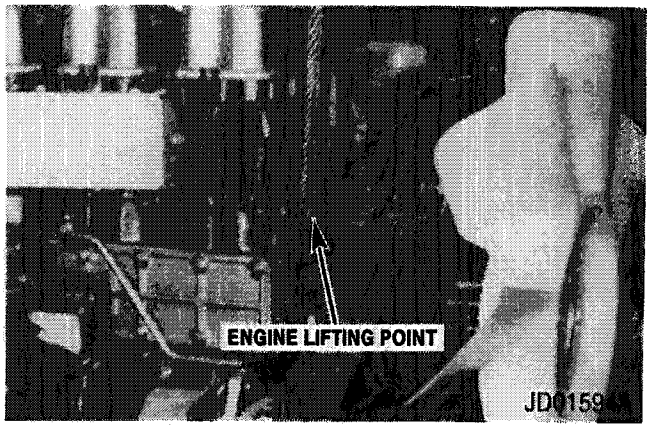
Tag and disconnect the two air hoses.

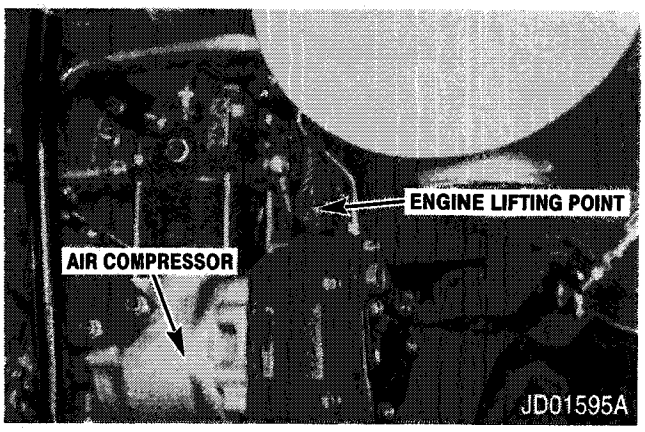
STEP 23



Disconnect the wiring harness connector from the engine speed sensor.

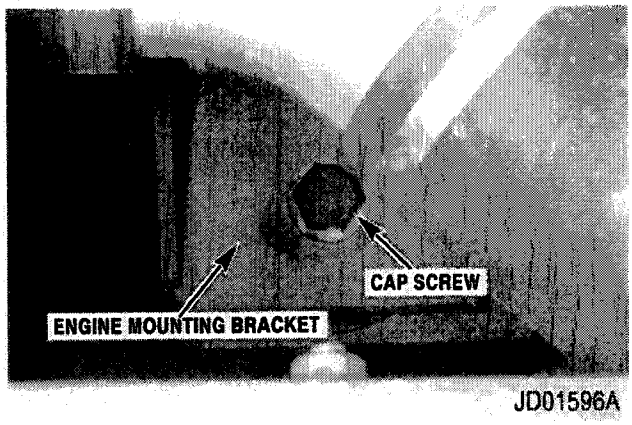
STEP 24

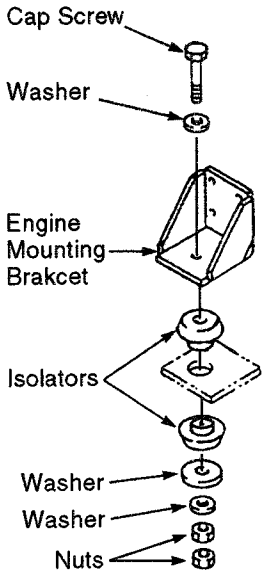




Connect suitable lifting equipment to the engine at the two lifting points. The weight of the engine is 2249 pounds (1020 kg).

STEP 25





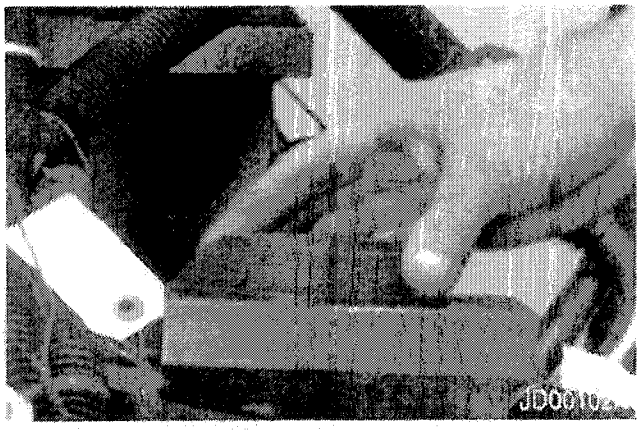
Remove the two nuts, three washers, rubber isolator, and cap screw. Repeat this step for the remaining three engine mounts.

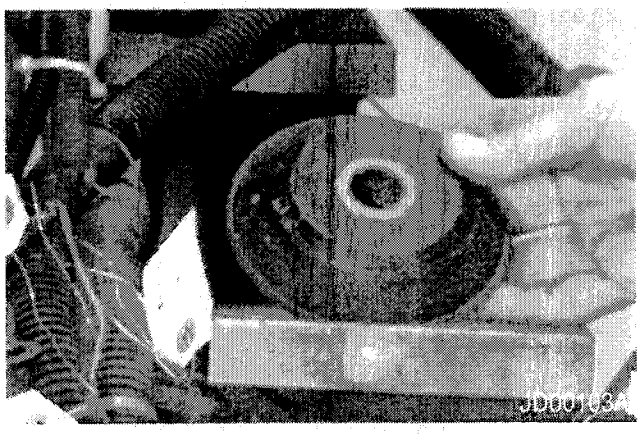
STEP 26

NOTE: *When raising the engine from the machine check and make sure all wires and hoses have been disconnected and will not interfere with the removal of the engine.*

Raise the engine from the mounts. Move the engine rearward and away from the machine.

STEP 27

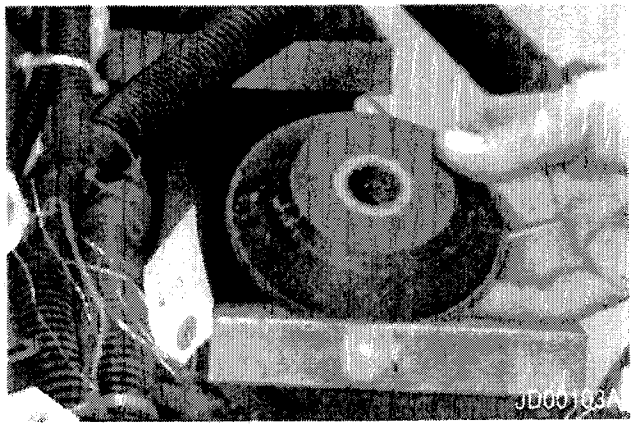


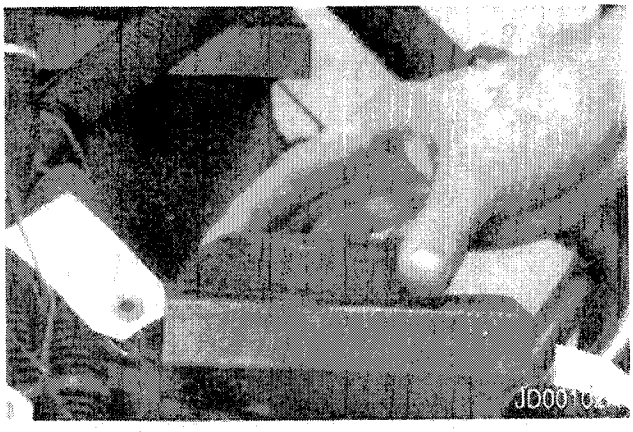


Remove the rubber engine isolators from the four engine mounts.

Installation

STEP 1



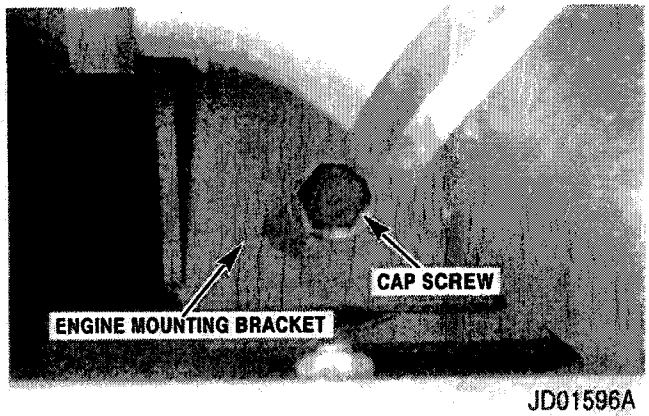


Inspect the rubber engine isolators for cracks, deterioration, or damage. Replace the isolators if cracked, deteriorated, or damaged. Install the rubber engine isolators on the four engine mounts.

STEP 2

Connect suitable lifting equipment to the engine. The weight of the engine is 2249 pounds (1020 kg). Move the engine into position and lower onto the engine mounts.

STEP 3



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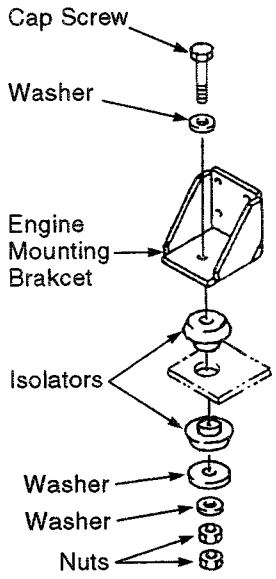


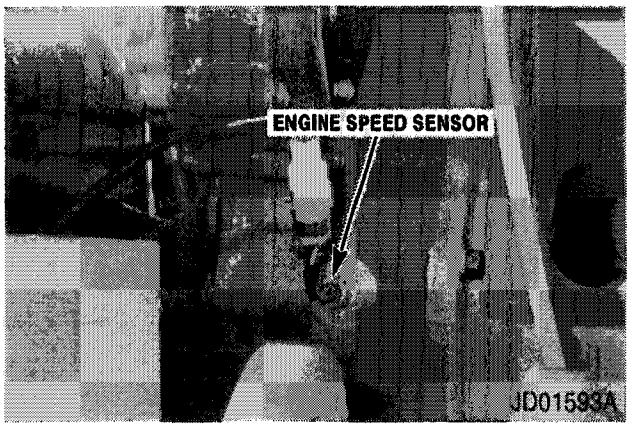
JS01597A

Apply Loctite 262 to the threads of the cap screw. Install the rubber isolator, cap screw, three washers, and one nut. Tighten the cap screw to 215 to 245 lb-ft (290 to 335 Nm). Install the second nut and tighten securely against the first nut. Repeat this step for the remaining three engine mounts.

STEP 4

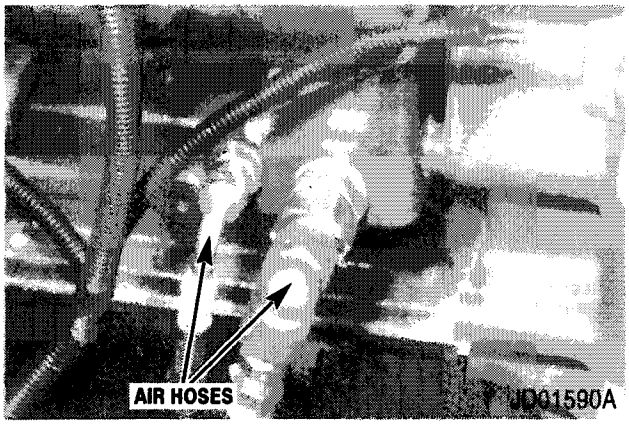
Disconnect the lifting equipment from the engine lifting points.

STEP 5



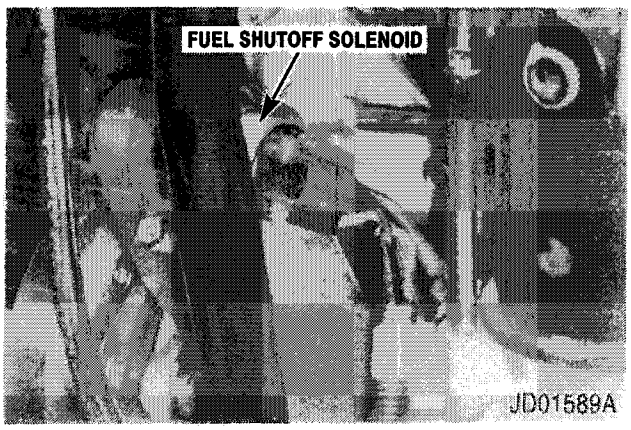
Connect the wiring harness connector to the engine speed sensor.

STEP 6



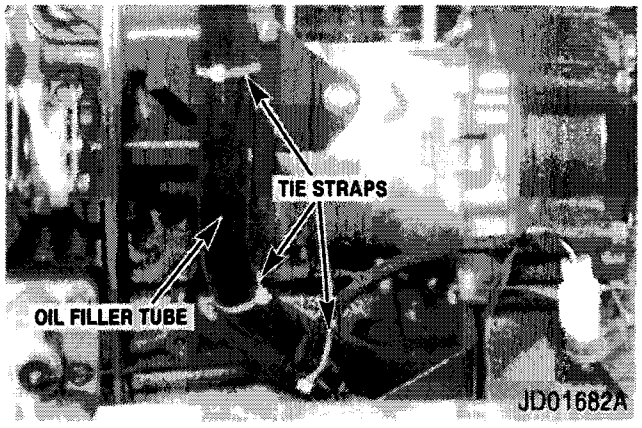
Connect the two air hoses following the tags installed during removal. Remove and discard the tags.

STEP 7



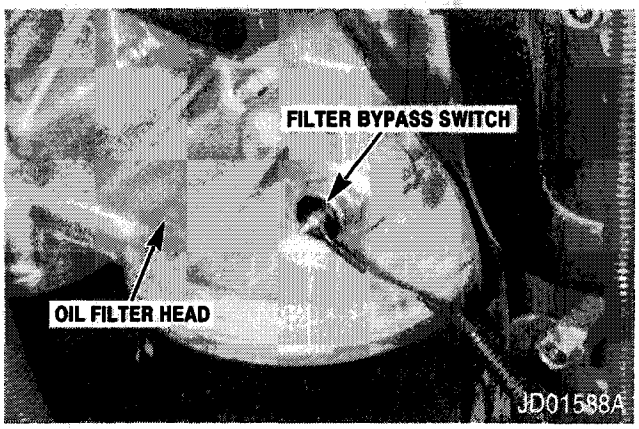
Connect the wiring harness two wires to the fuel shutoff solenoid following the tags installed during removal. Remove and discard the tags.

STEP 8



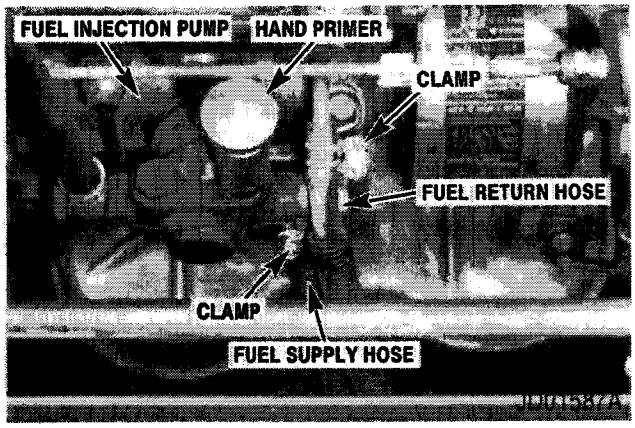
Install three new tie straps to secure the wiring harness to the oil filler tube.

STEP 9



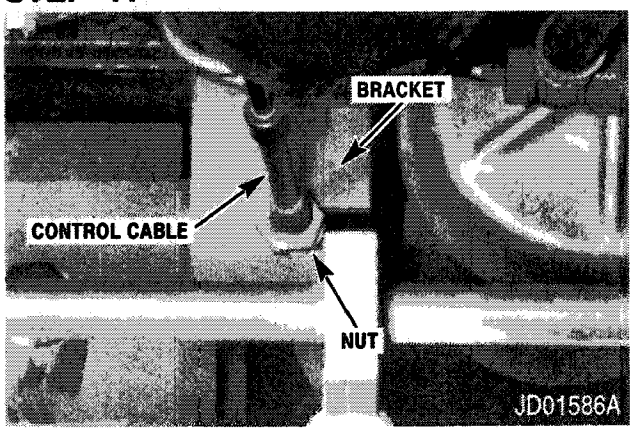
Connect the wiring harness wire to the filter bypass switch following the tag installed during removal. Remove and discard the tag.

STEP 10



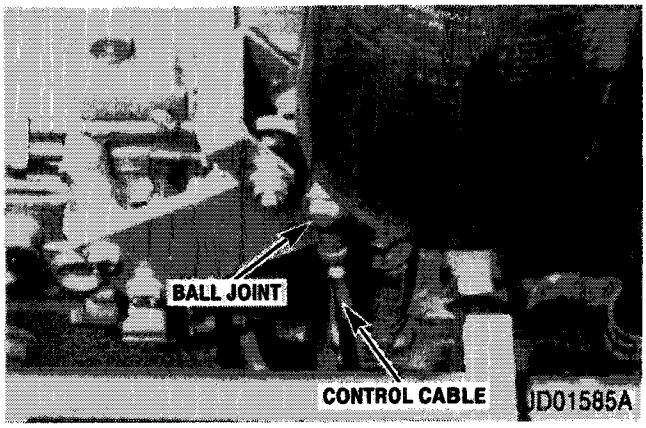
Install a clamp on the fuel return hose and the fuel supply hose. Connect the fuel return hose and the fuel supply hose to the fittings following the tags installed during removal. Position the clamps on the hoses and tighten the clamps to secure the hoses. Remove and discard the tags.

STEP 11



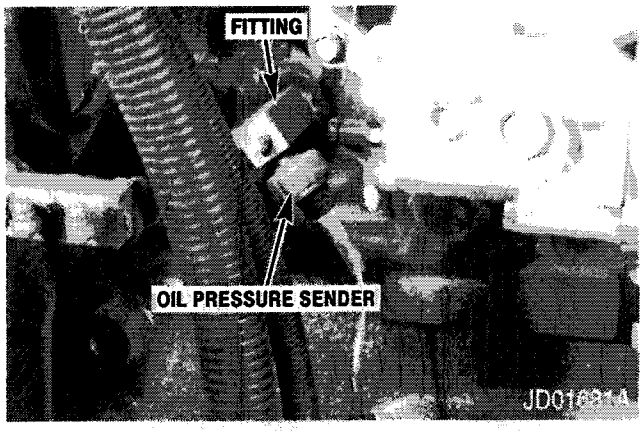
Install the control cable on the bracket and tighten the two nuts to secure the control cable.

STEP 12



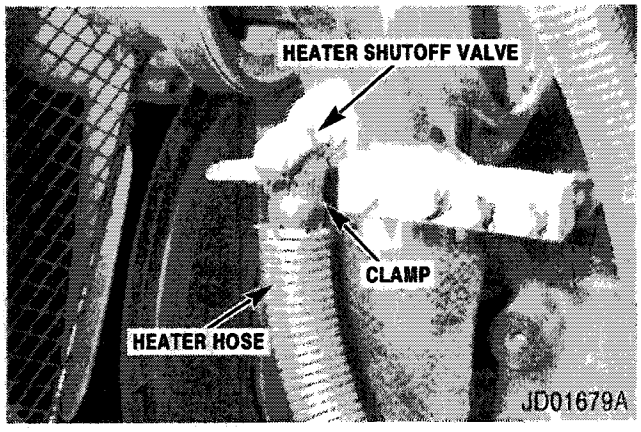
Connect the control cable ball joint to the fuel injection pump throttle bracket. Install the lock washer and nut to secure the ball joint.

STEP 13



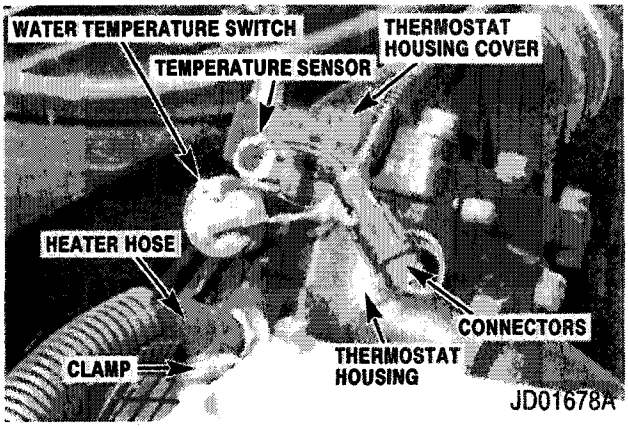
Connect the wiring harness wire to the oil pressure sender following the tag installed during removal. Remove and discard the tag.

STEP 14



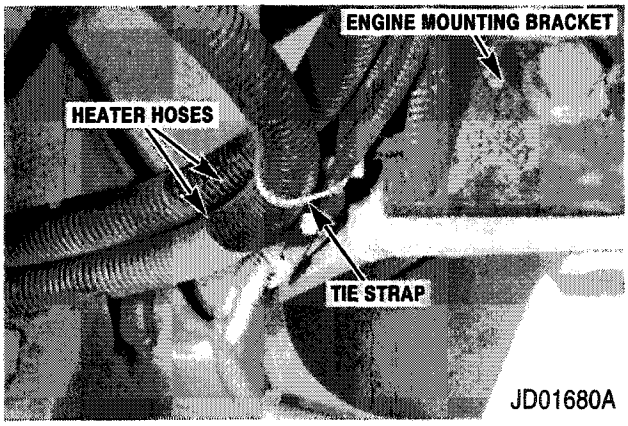
Install the clamp on the heater hose. Connect the hose to the heater shutoff valve and tighten the clamp to secure the hose.

STEP 15



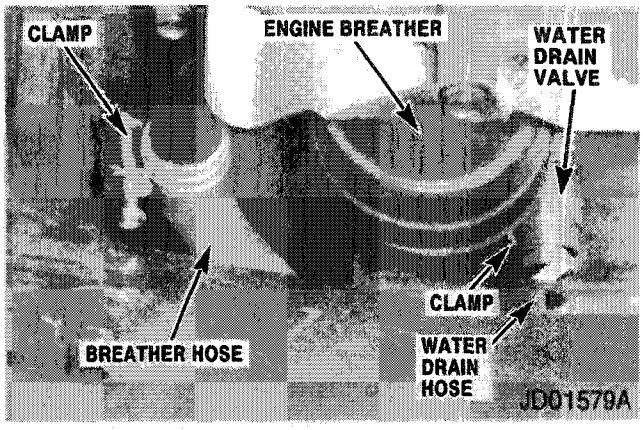
Install the clamp on the heater hose. Connect the heater hose to the fitting installed in the thermostat housing. Tighten the clamp to secure the heater hose. Connect the wiring harness two wires to the water temperature switch following the tags installed during removal. Connect the temperature sensor connector to the wiring harness connector.

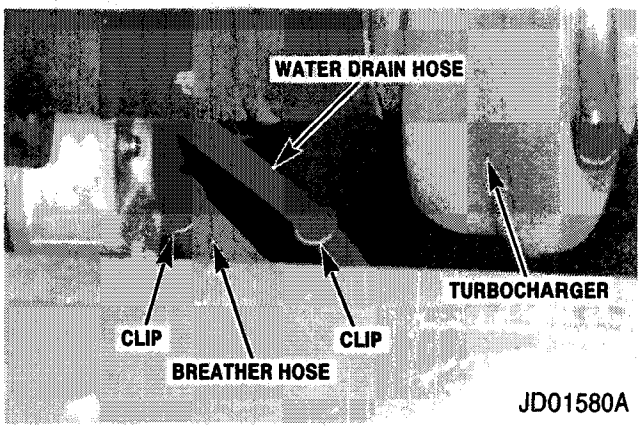
STEP 16



Install a new tie strap to secure two heater hoses and the wiring harness to the engine mounting bracket.

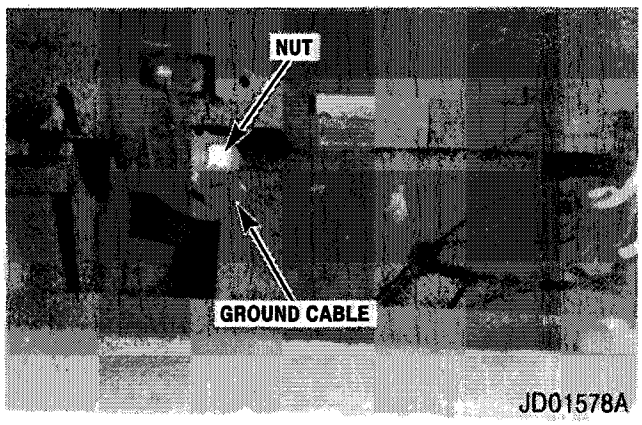
STEP 17





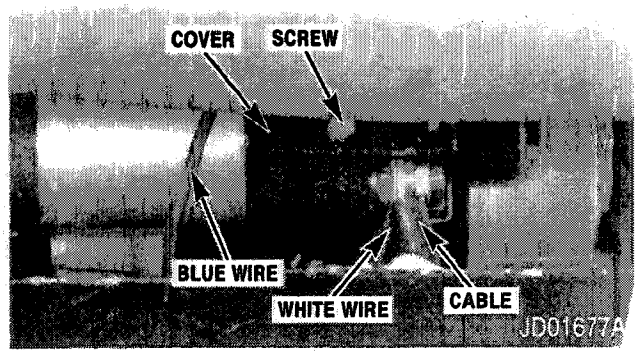
Route the water drain hose and the breather hose through the clips installed in the engine. Using pliers, install the clamp on the water drain hose and connect the water drain hose to the water drain valve. Install the clamp on the breather hose. Connect the breather hose and tighten the clamp.

STEP 18



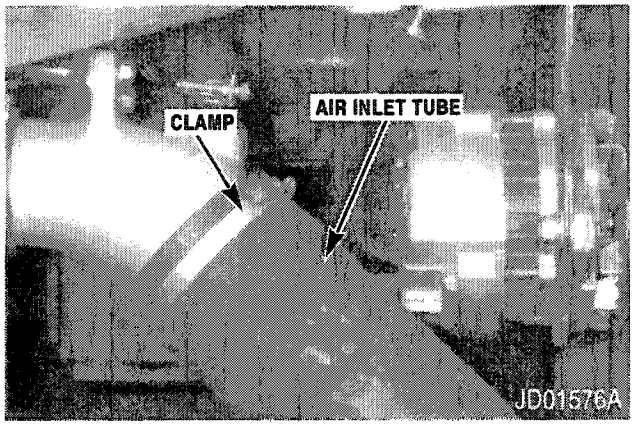
Connect the ground cable to the engine flywheel housing and install the lock washer and nut.

STEP 19



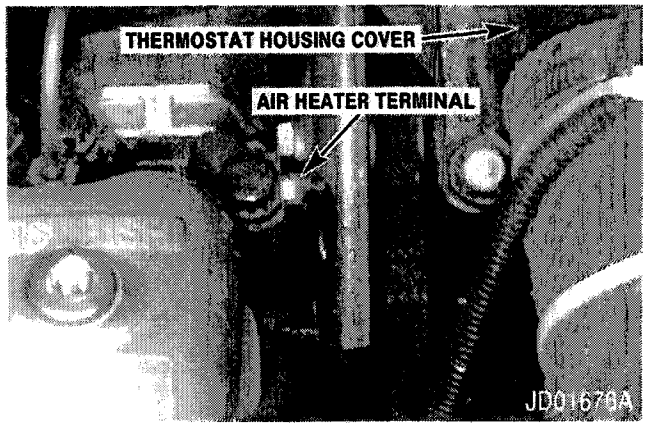
Connect the wiring harness white wire and the cable to the large terminal of the starter assembly following the tags installed during removal. Connect the wiring harness blue wire to the starter assembly following the tag installed during removal. Install the cover on the starter assembly and secure using the flat washer, lock washer, and screw. Remove the tags from the wiring harness wires and cable and discard the tags.

STEP 20



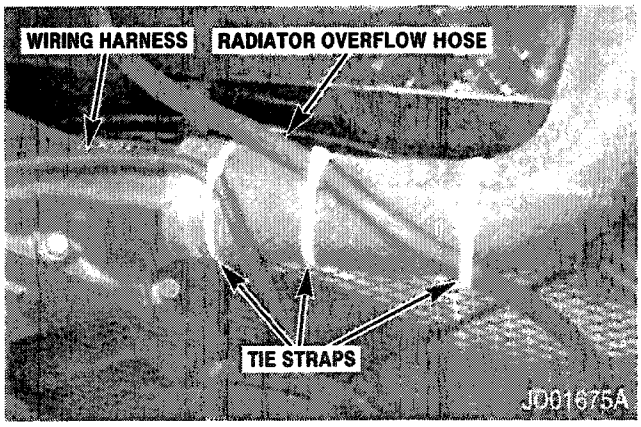
Connect the air inlet tube to the turbocharger. Tighten the clamp to secure the tube.

STEP 21



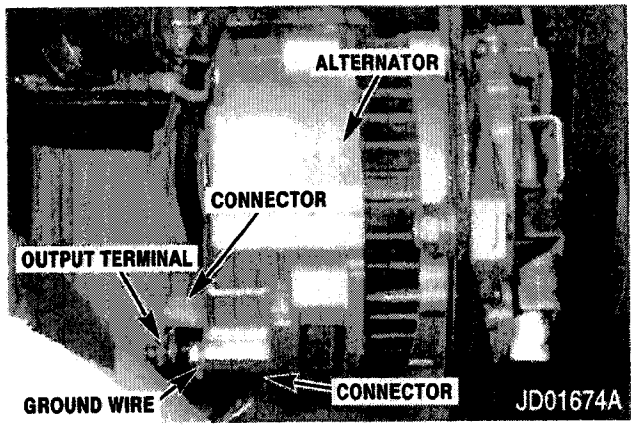
Connect the wiring harness wire to the air heater terminal following the tag installed during removal. Remove and discard the tag.

STEP 22



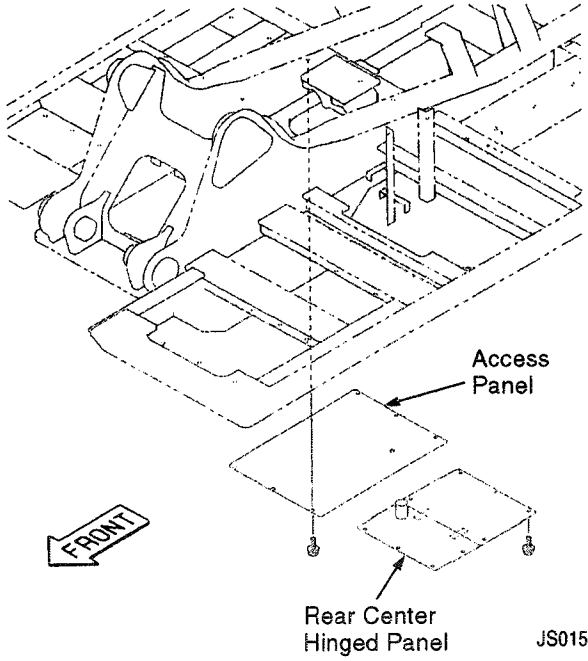
Install three new tie straps to secure the wiring harness and the radiator overflow hose to the radiator hose.

STEP 23



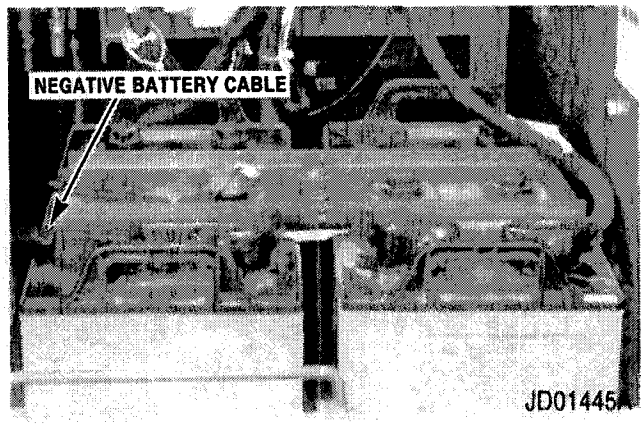
Connect the wiring harness wire to the alternator output terminal following the tag installed during removal. Connect the wiring harness ground wire and the two connectors to the alternator following the tags installed during removal. Remove and discard the tags.

STEP 24



Swing the rear center hinged panel below the engine up. Secure the hinged panel using five cap screws. Install the bottom right rear access panel.

STEP 25



Connect the negative battery cable to the battery.

STEP 26

Install the radiator, oil cooler, and the cooling system reservoir. Service the radiator coolant. (See Section 2001.)

STEP 27

Install the hydraulic pump. (See Section 8002.)