

# STX275 through STX450 Tractor Service Manual No.6-13290 Table of Contents

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# Section 1001

## SAFETY


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

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

Rac 7-90470

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February, 1999

# SAFETY

 **WARNING:** THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.\*\*

M171B


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

Put the “Do Not Operate” tag shown below on the key for the key switch when keys are removed for servicing or repairing the machine. Tags are available from your service parts supplier.


Before servicing a machine, park the machine on hard level ground. Turn off the engine, apply the parking brake and remove the key from the key switch. Put blocks in front of and behind either the front or rear wheels.




MS99B001

 **WARNING:** Read the operators manual to familiarize yourself with the correct control functions.


M489

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


M490

 **WARNING:** This is one man machine, no riders allowed.


M491

 **WARNING:** Before starting engine study Operators 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 and Service Manuals may be obtained from your equipment dealer.


M103A

 **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.


M492

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


M493

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

M494

 **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.

M495

 **WARNING:** Always wear heat protective gloves to prevent burning your hands when handling heated parts.

SM121A



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

M496



**WARNING:** Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.

To Prevent Personal Injury:

Relieve all pressure, before disconnecting fluid lines. Before applying pressure, make sure all connections are tight and components are in good condition.

Never use your hand to check for suspected leaks under pressure.

Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

SM171A



**WARNING:** 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.

M497



**WARNING:** 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).

M498



**WARNING:** 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

M499



**WARNING:** When servicing or repairing the machine. Keep the shop floor and operators 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.

M500



**WARNING:** Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in the Service Manual.

M501



**WARNING:** 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 door and get outside air into the area.

M502



**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.

M503



**WARNING:** Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operators Manual. Failure to follow these instructions can cause serious injury or death.

M504

## ROLL OVER PROTECTIVE STRUCTURE (ROPS)

ROPS, the operators seat, the seat belts and all mounting, accessories and wiring inside the operators protective system must be carefully checked after a tractor accident and all parts with damage must be replaced immediately. DO NOT TRY TO MAKE REPAIRS OR WELD THE ROPS.

### Safety Rules:

1. Do not make modifications to the ROPS. Example, welding an accessory to the ROPS or drilling a hole in the ROPS.
2. Special fasteners are used to install the operator protective parts. Replacement parts must be the same as given in the Parts Catalog.

# Section 2001

## ENGINE REMOVAL AND INSTALLATION

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

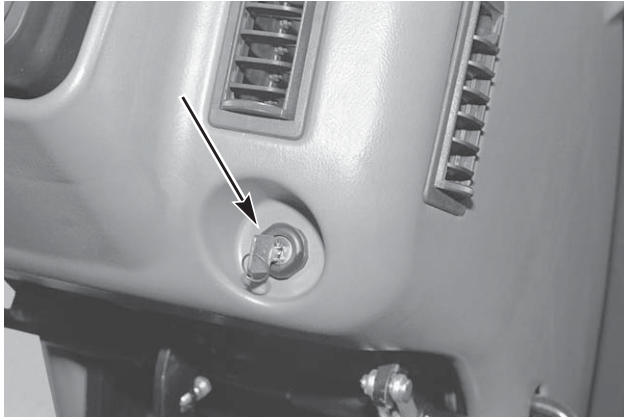
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# ENGINE REMOVAL

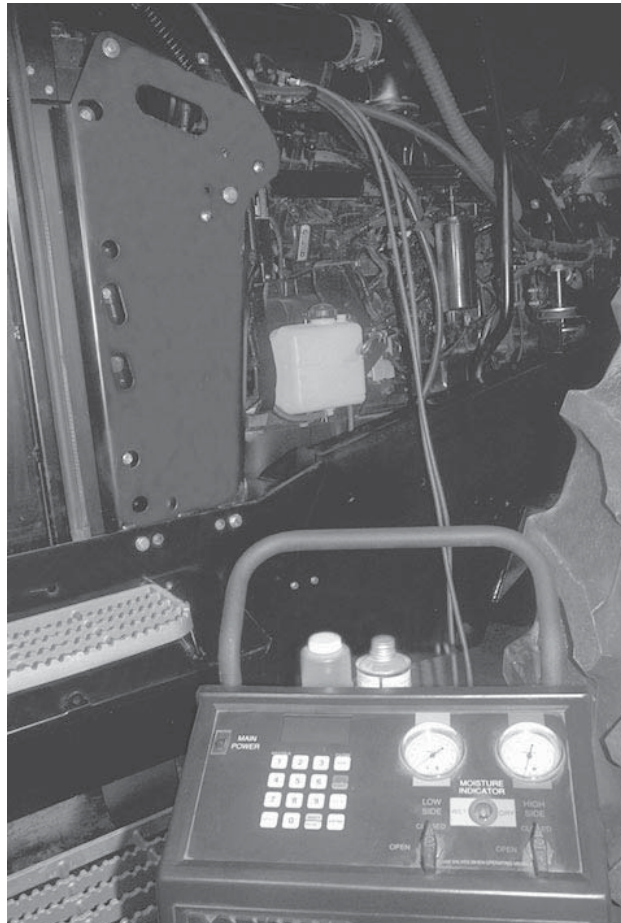
## STEP 1



MK98C099

1. Park the tractor on solid, level surface.
2. Place the shift lever in PARK.
3. Shut off the engine and remove the key from the switch.

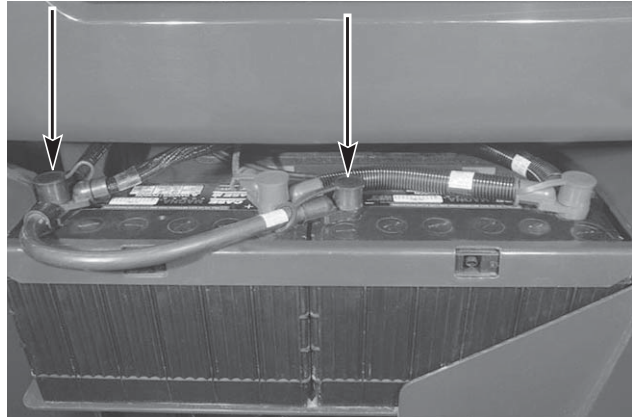
## STEP 2



MK99J135

See Section 9001 A/C System - Recovery, Evacuation, Charging for instructions to discharge the air conditioning system.

## STEP 3



MK99K032

Open the battery access door and disconnect the negative battery cables from the two batteries.

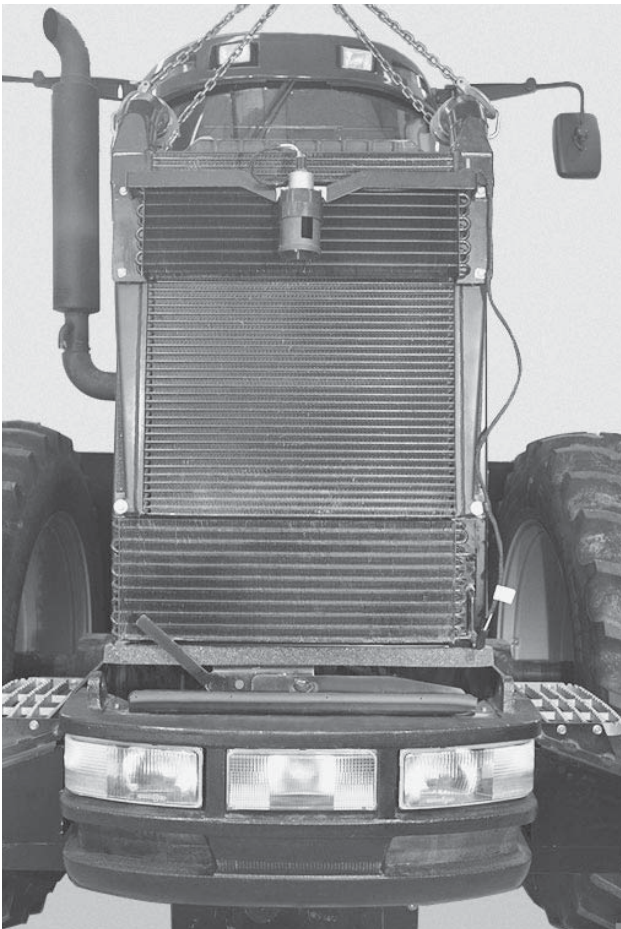
## STEP 4



MK99H256

See Section 9007 Hood Removal for instructions to remove the hood and support bar from the tractor.

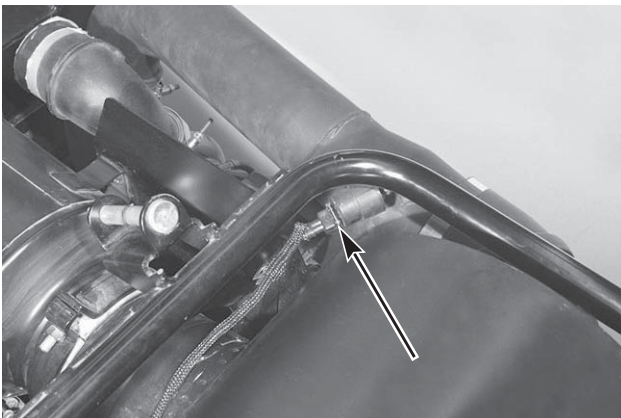
**STEP 5**



MK99J073

See Section 9008 Radiator Removal for instructions to drain the coolant and remove the radiator and cooler assembly from the front frame.

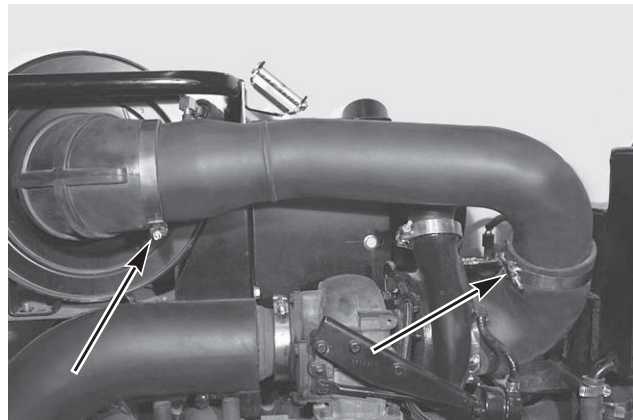
**STEP 6**



MK99J008

Remove the wire connector from the air restrictor switch on the air cleaner outlet tube.

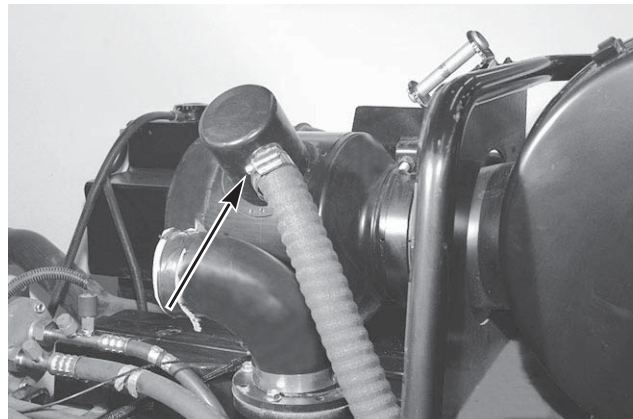
**STEP 7**



MK99J007

Loosen the clamps on the air cleaner outlet tube and remove the tube.

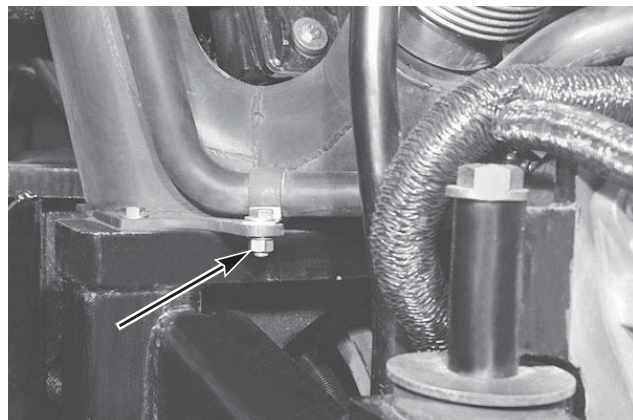
**STEP 8**



MK99J049

Loosen the clamp and remove the exhaust aspirator hose from the air cleaner inlet.

**STEP 9**



MK99J051

Remove the aspirator tube P-clamp mounting bolt.

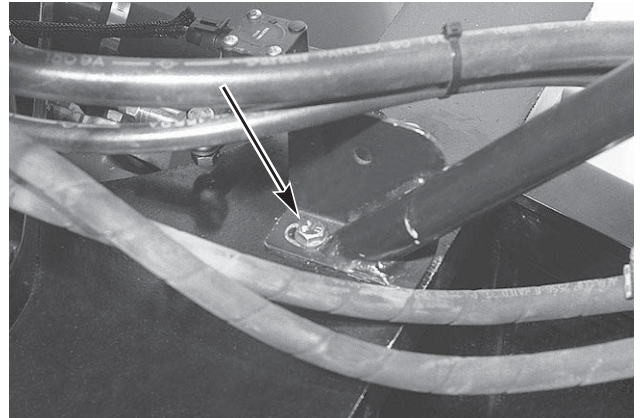
**STEP 10**



MK99J050

Loosen the clamp and remove the aspirator tube and hose from the muffler.

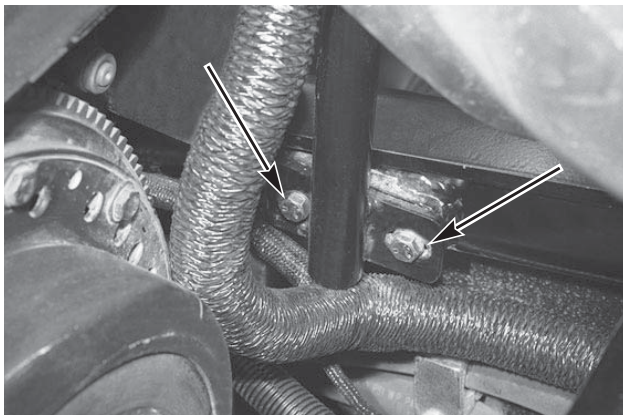
**STEP 13**



MK99J010

Remove the rear hood support mounting assembly and remove the assembly from the tractor.

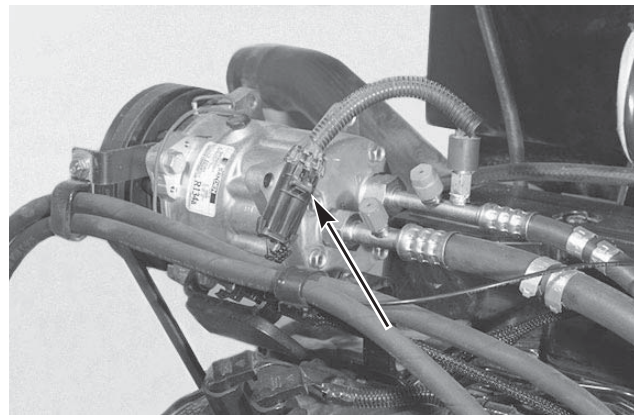
**STEP 11**



MK99J004

Attach an overhead hoist to the hood support assembly and remove the two right side mounting bolts.

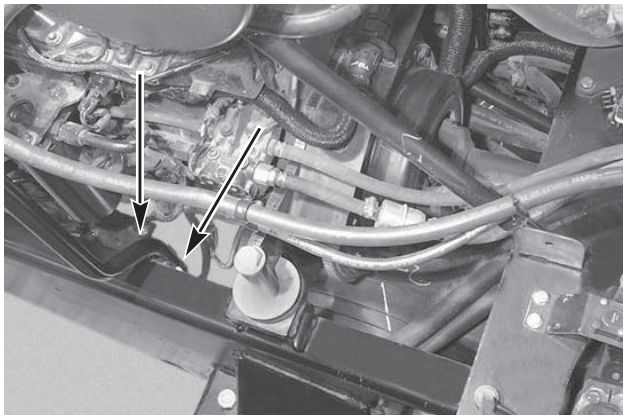
**STEP 14**



MK99J023

Remove the wire connector from the A/C system high pressure switch.

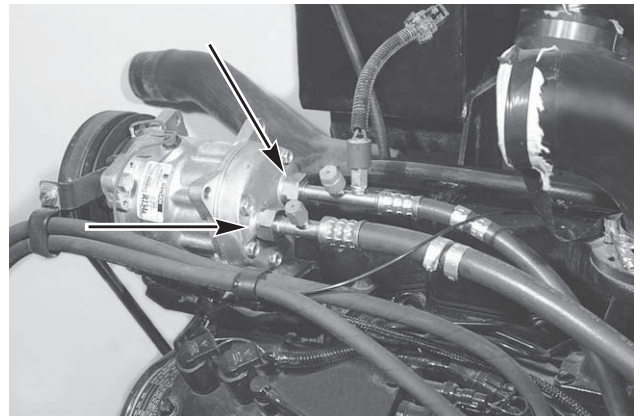
**STEP 12**



MK99J024

Remove the two left side hood support mounting bolts.

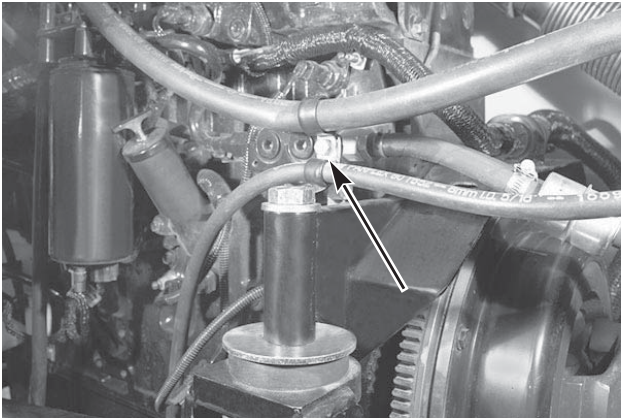
**STEP 15**



MK99J020

Remove the suction and discharge hoses from the A/C compressor. Install caps on the compressor fittings and plugs in the hoses. Discard the O-rings.

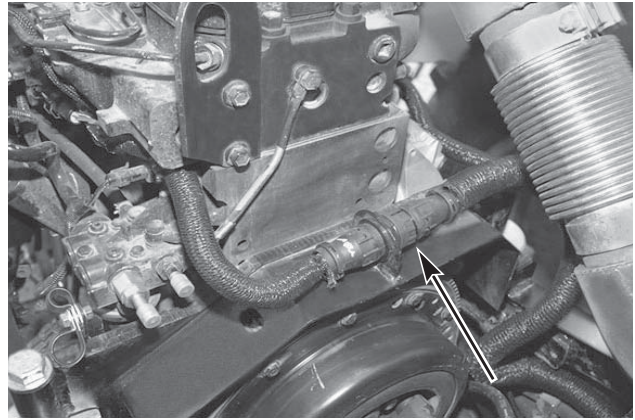
**STEP 16**



MK99J018

Remove the mounting bolt and nut. Remove the A/C suction and dryer hoses from the hose bracket.

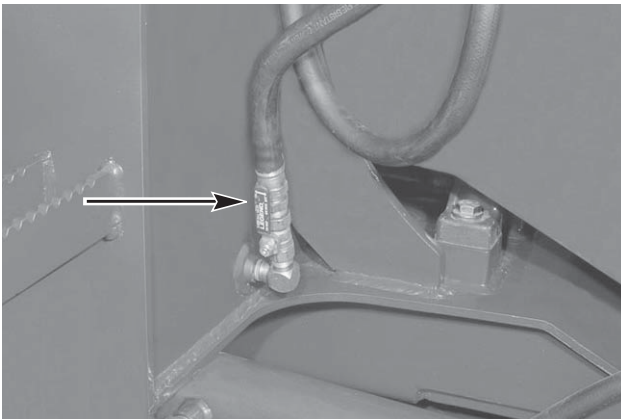
**STEP 19**



MK99J028

Remove the engine front frame wire harness connector from the engine wire harness.

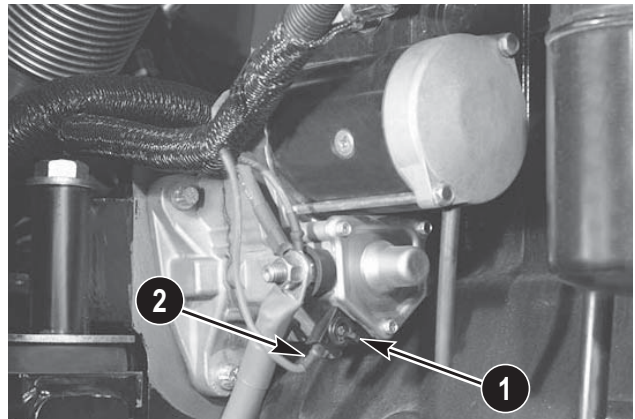
**STEP 17**



MK98G023

Turn the valve lever clockwise to shut off the fuel valve on the tank.

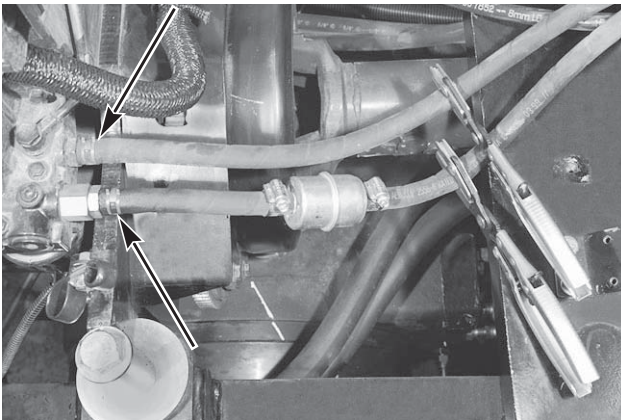
**STEP 20**



MK99J022

Open the cover plug (1) and remove the Phillips head screw to remove the starter switch wire (2) from the starter solenoid.

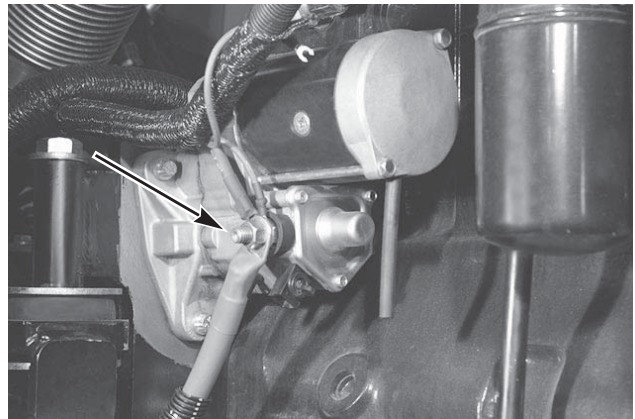
**STEP 18**



MK99J017

Install clamps on the fuel supply and return hoses. Loosen the hose clamps and remove the hoses from the engine. Cap the fuel pump fittings and plug the hose ends.

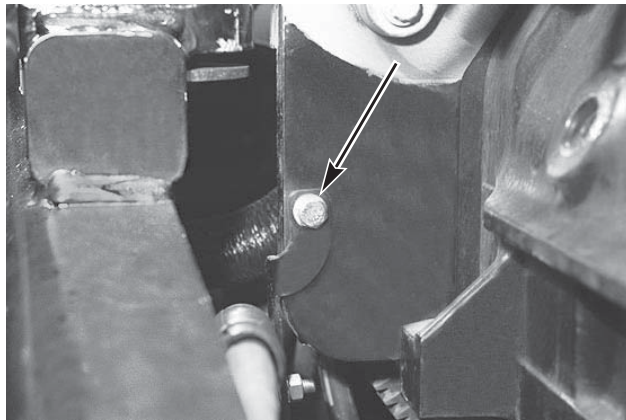
**STEP 21**



MK99J021

Remove the battery cable, alternator cable and starter switch power supply wire from the starter solenoid.

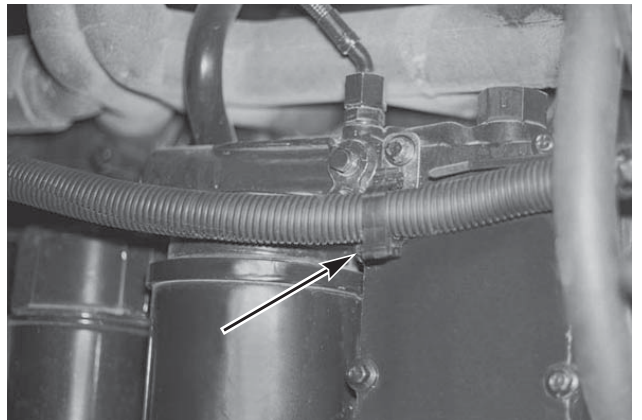
**STEP 22**



MK99J025

Remove the battery cable clamp mounting bolt.

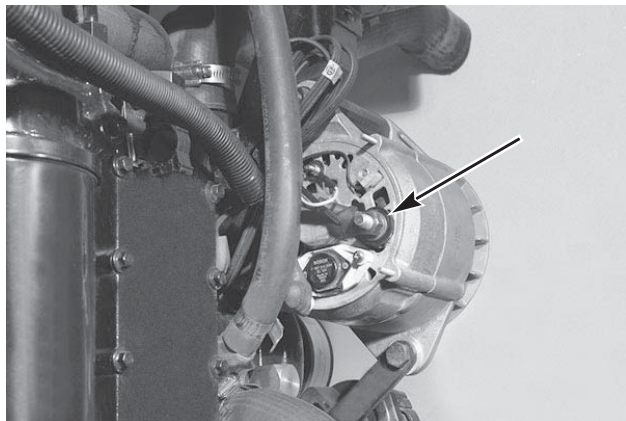
**STEP 25**



MK99J034

Remove the alternator wire harness from the engine clamp.

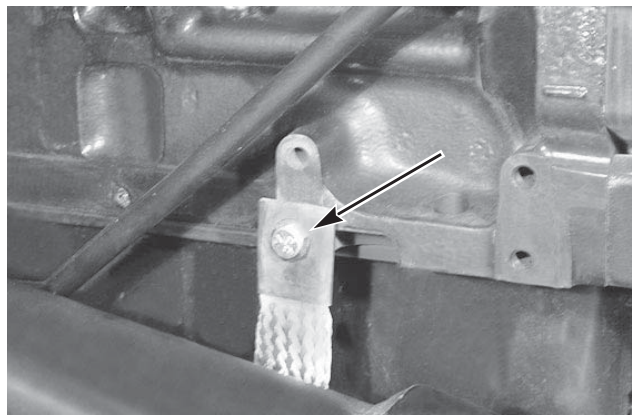
**STEP 23**



MK99J027

Remove the alternator to battery cable from the alternator.

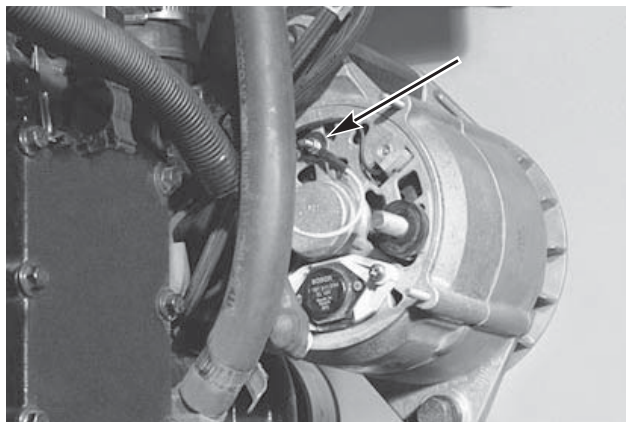
**STEP 26**



MK99J016

Remove the ground strap from the engine.

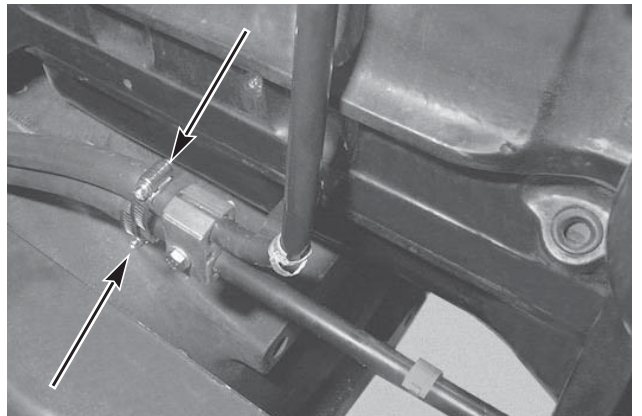
**STEP 24**



MK99J026

Remove the alternator exciter wire.

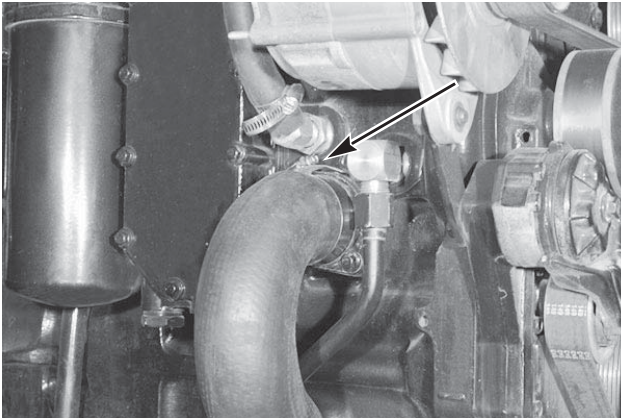
**STEP 27**



MK99J177

Mark the hoses for location. Loosen the hose clamps and remove the heater hoses from the engine.

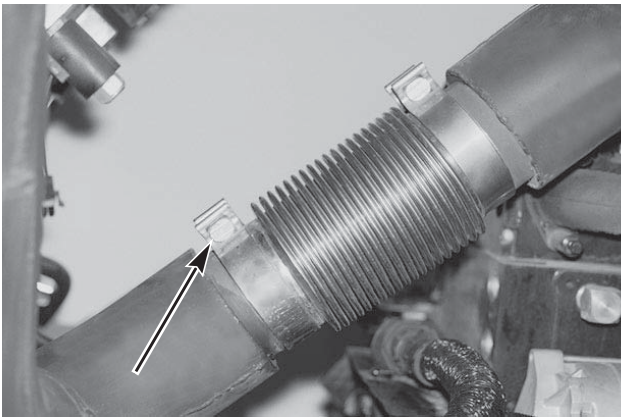
### STEP 28



MK99J031

Loosen the hose clamp and remove the lower radiator hose from the engine.

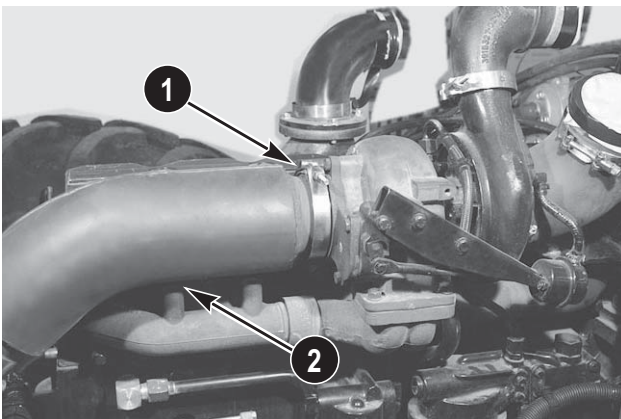
### STEP 29



MK99J035

Loosen the band clamps on the exhaust flex tube.

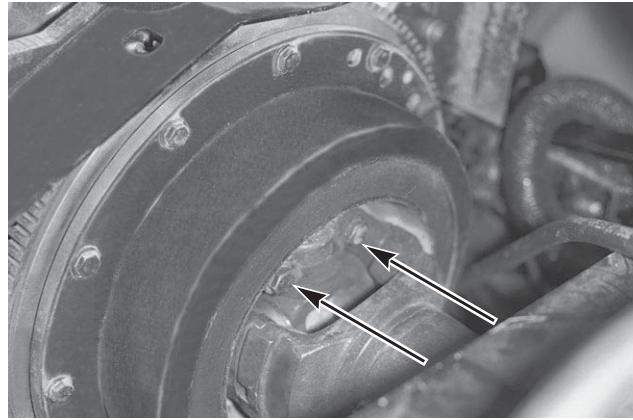
### STEP 30



MK99J029

Remove the channel clamp (1) from the turbo exhaust port. Remove the exhaust pipe (2) and flex tube from between the turbo and the frame mounted exhaust pipe.

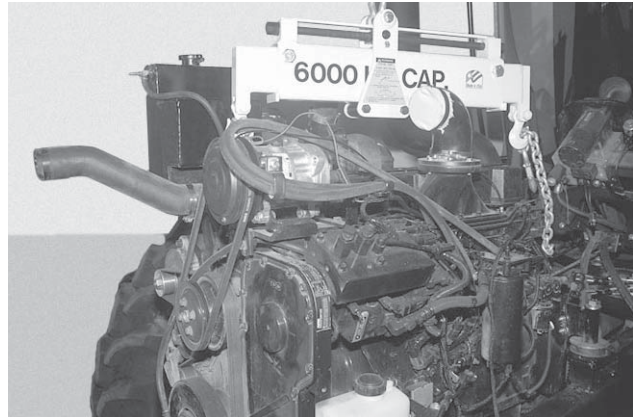
### STEP 31



MK99J033

Remove the four mounting bolts and slide the drive shaft rearward away from the engine drive coupler.

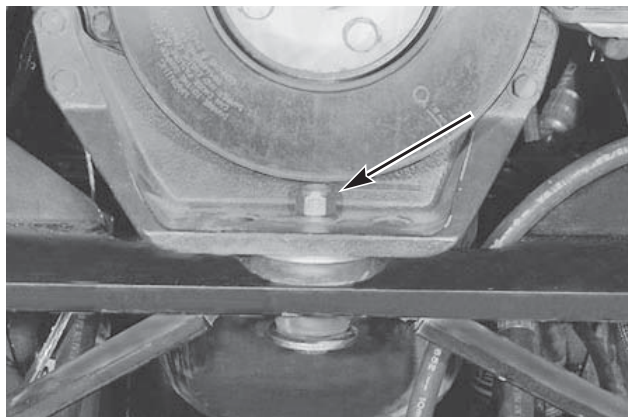
### STEP 32



MK99J041

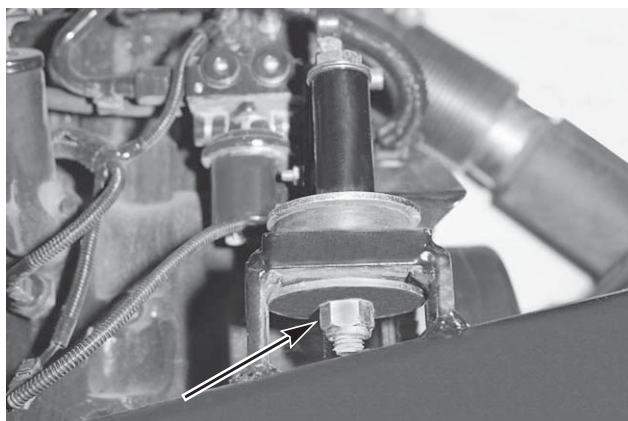
Install the OEM 4130 Load Rotor on the two engine lifting brackets. Attach the load rotor to an overhead hoist.

**IMPORTANT:** *The engine lifting brackets are for vertical lifting only. Any lifting device that is not vertically in-line with the lifting brackets can damage the engine rocker arm cover or cause bracket failure.*

**STEP 33**

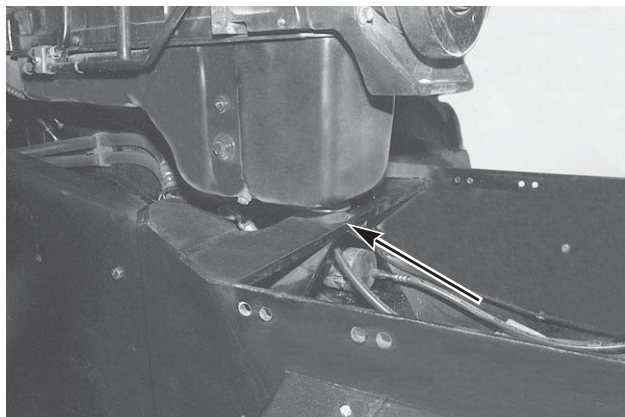
MK99J013

Remove the lock nut, bolt and washers from the front engine mount.

**STEP 34**

MK99J030

Remove the lock nut, large flat washer, bolt and small flat washer from the left side (shown) and right side rear engine mounts.

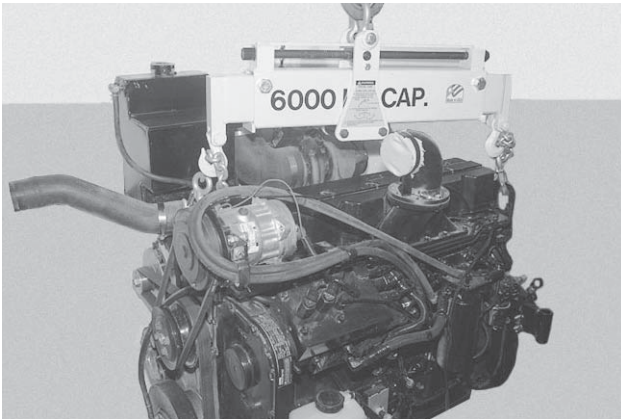
**STEP 35**

MK99J040

To remove the engine, lift the engine until the oil pan will clear the front frame engine mount crossmember. Move the engine forward out of the tractor.

## ENGINE INSTALLATION

### STEP 36

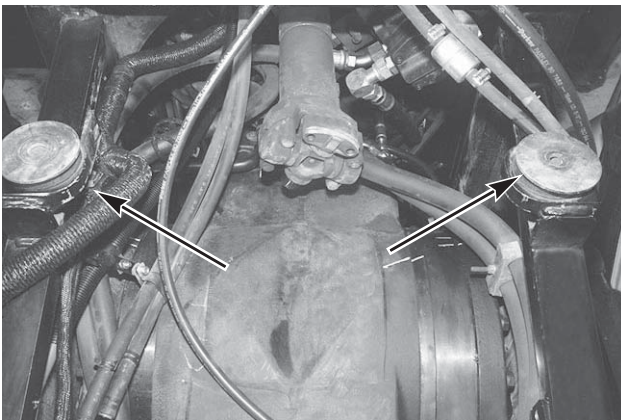


MK99J036

Install the OEM 4130 Load Rotor on the two engine lifting brackets. Attach the load rotor to an overhead hoist.

**IMPORTANT:** *The engine lifting brackets are for vertical lifting only. Any lifting device that is not vertically in-line with the lifting brackets can damage the engine rocker arm cover or cause bracket failure.*

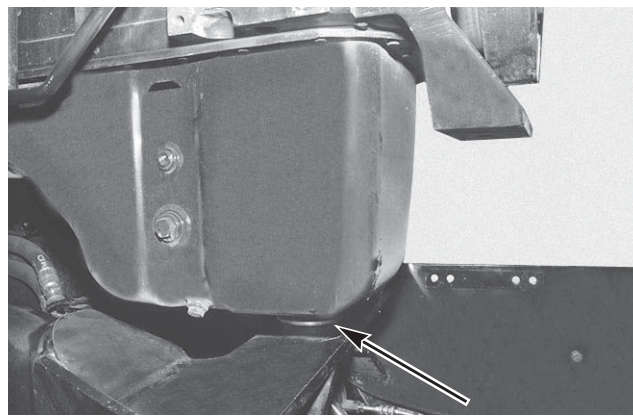
### STEP 37



MK99J037

If removed after the engine was removed, install the three large flat washers on the front and rear (shown) rubber isolators.

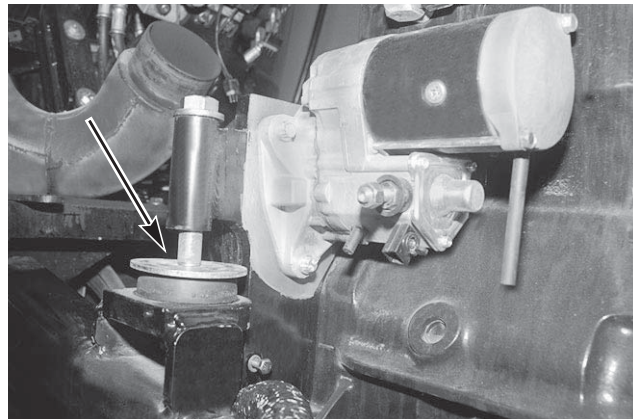
### STEP 38



MK99J039

Install the bolts and small flat washers in the rear engine mounts. Lift the engine until the oil pan will clear the front frame and engine mount crossmember. Move the engine rearward into the tractor until it is positioned above the engine mounting brackets.

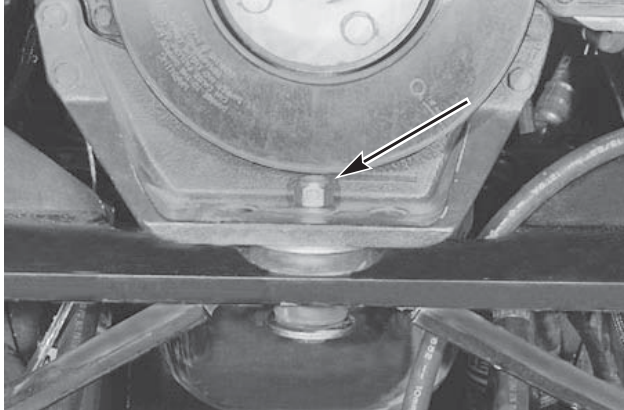
### STEP 39



MK99J038

Use the rear mounting bolts as guides and slowly lower the engine on the front frame engine mounting brackets.

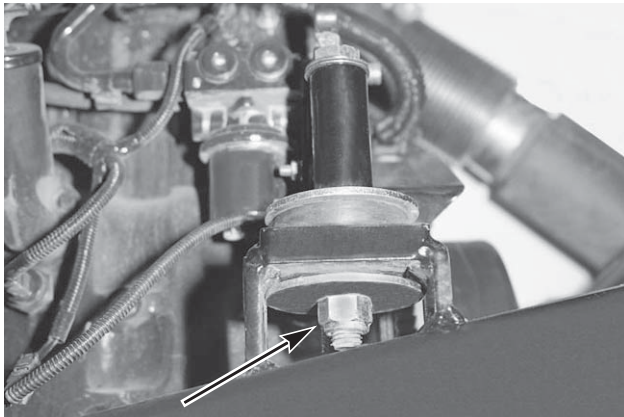
**STEP 40**



MK99J013

Install the bolt, flat washers and lock nut through the front motor mount. Tighten the bolt and lock nut to specifications.

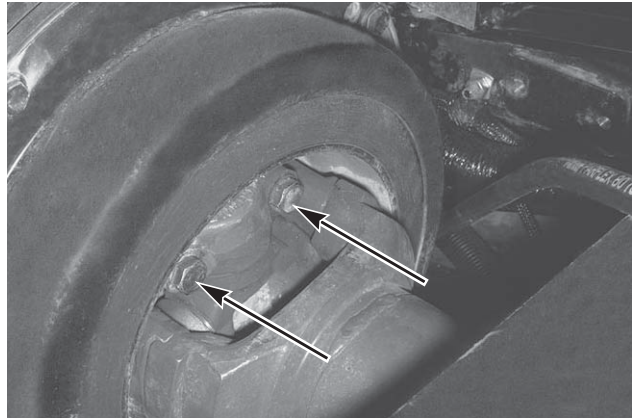
**STEP 41**



MK99J030

Install the large flat washers and lock nuts on the rear engine mount bolts. Tighten the bolts and lock nuts to specifications. Remove the hoist and load rotor.

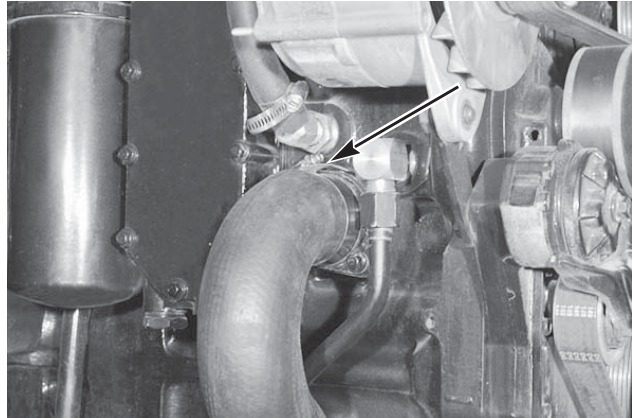
**STEP 42**



MK99J015

Move the driveshaft forward and install the four M12 x 20 bolts to secure the driveshaft to the engine drive coupler. Tighten the bolt and lock nut to specifications.

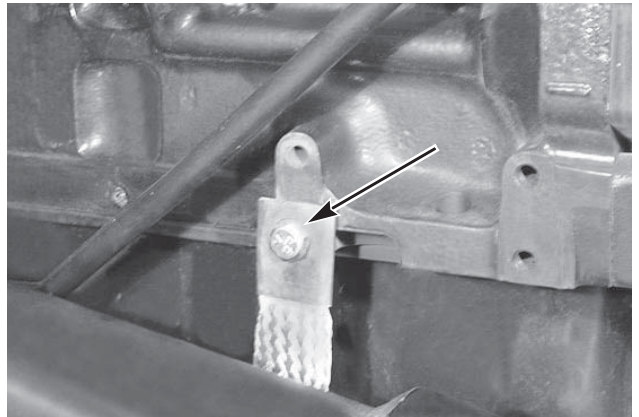
**STEP 43**



MK99J031

Install the lower radiator hose on the engine and tighten the hose clamp.

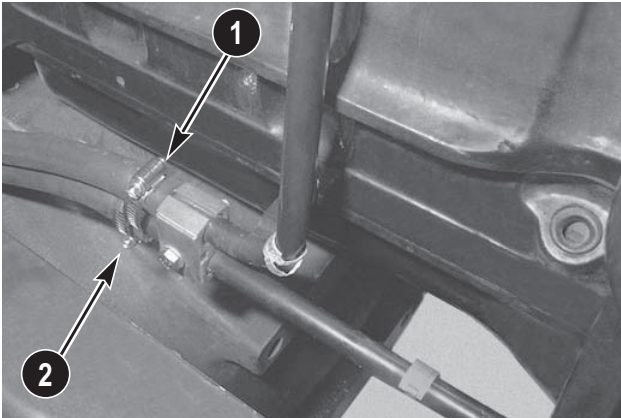
**STEP 44**



MK99J016

Install the right side ground strap on the engine.

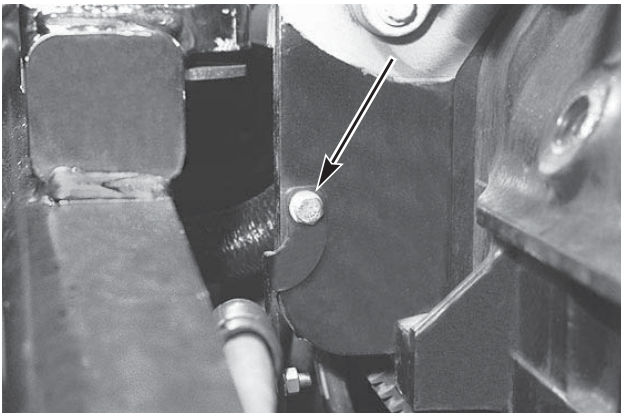
**STEP 45**



MK99J177

Install the heater supply hose (1) and return hose (2) on the engine and tighten the hose clamps.

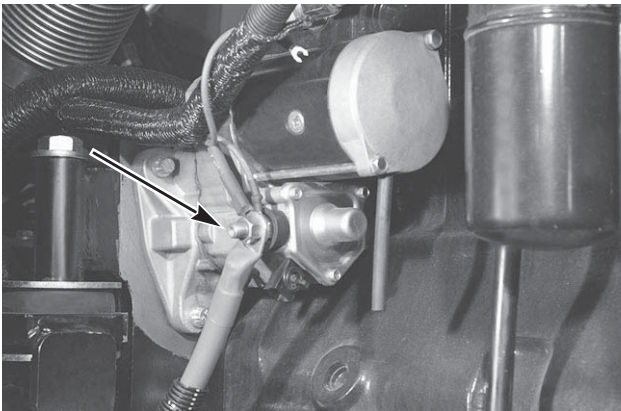
**STEP 46**



MK99J025

Use the M8 x 20 bolt and flat washer to install the heater hose and battery cable bracket on the right side motor mount. Tighten the bolt to specifications.

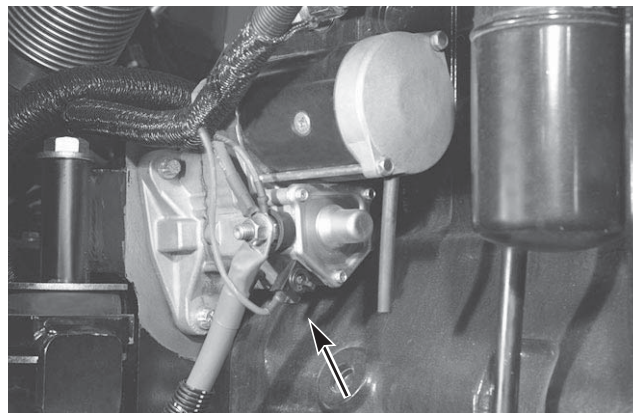
**STEP 47**



MK99J021

Install the battery cable, starter switch power supply wire and alternator cable on the starter solenoid.

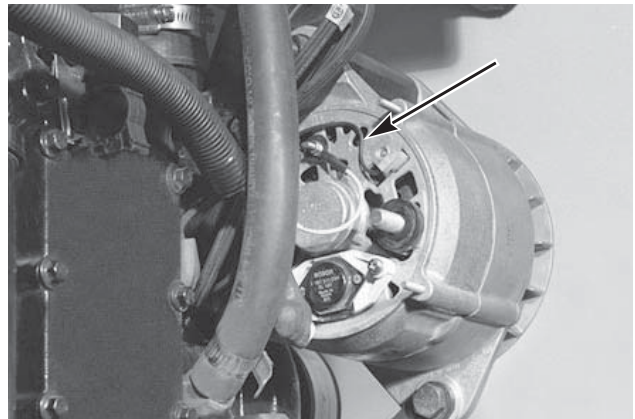
**STEP 48**



MK99J022

Install the starter switch wire on the starter solenoid.

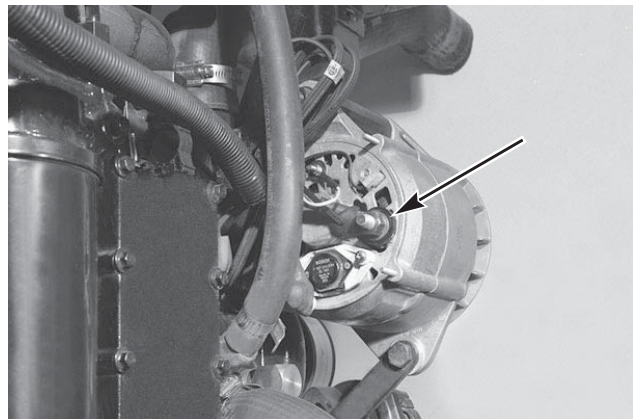
**STEP 49**



MK99J026

Install the exciter wire on the alternator.

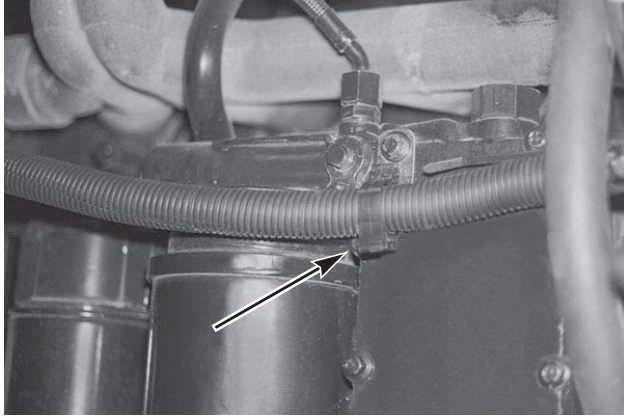
**STEP 50**



MK99J027

Install the battery wire on the alternator.

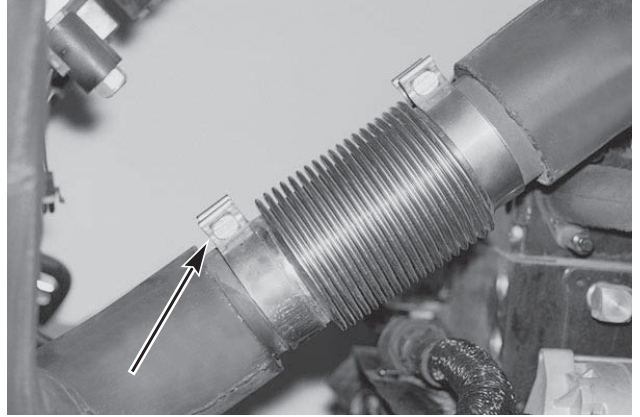
**STEP 51**



MK99J034

Install the alternator wire harness in the harness clamp on the engine.

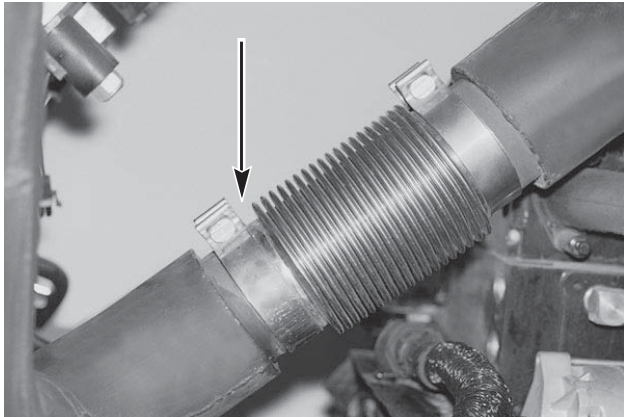
**STEP 54**



MK99J035

Tighten the flex tube band clamp to specifications.

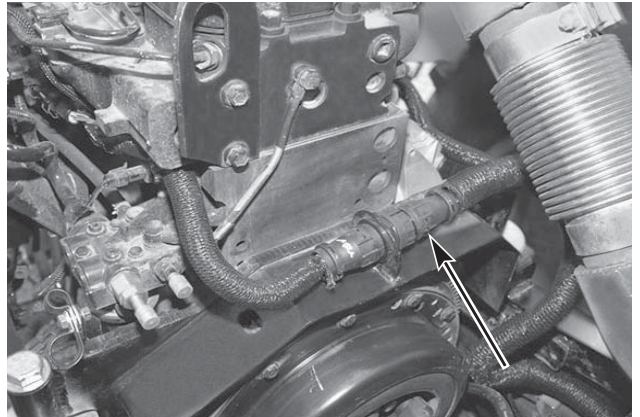
**STEP 52**



MK99J035

Install the flex tube and exhaust pipe assembly on the frame mounted exhaust pipe. Do not tighten the band clamp.

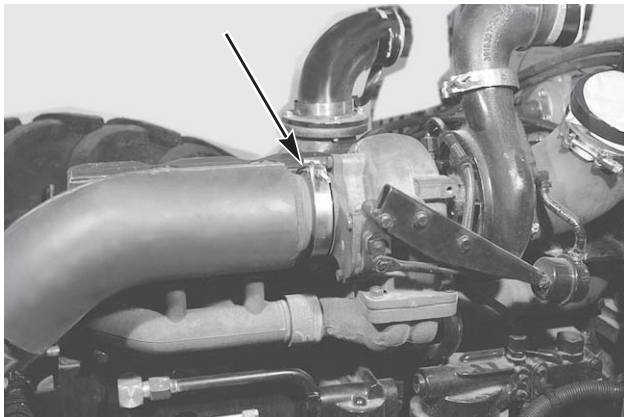
**STEP 55**



MK99J028

Install the front frame wire harness connector on the engine wire harness.

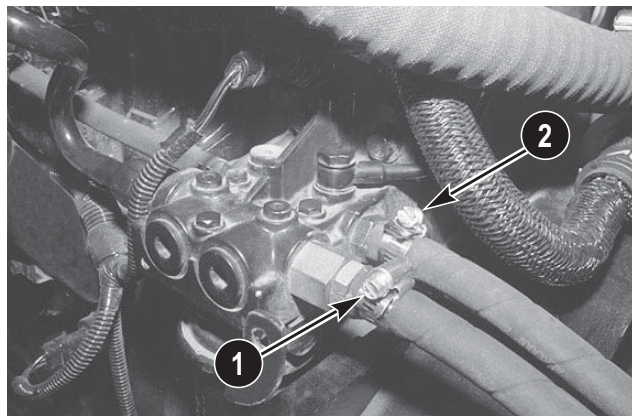
**STEP 53**



MK99J029

Use the channel clamp to install the exhaust pipe on turbo exhaust outlet. Tighten the channel clamp to specifications.

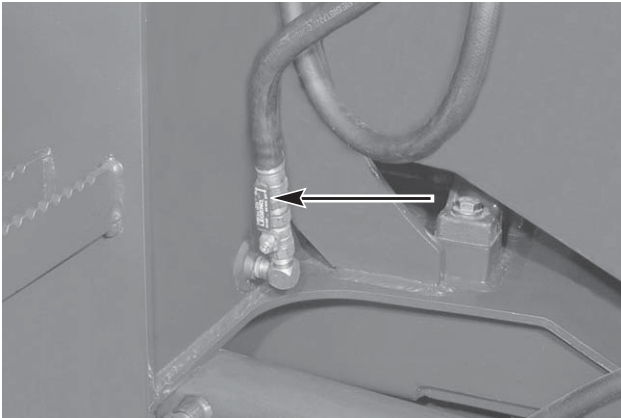
**STEP 56**



MK99J176

Install the fuel supply hose (1) and the fuel return hose (2) on the fuel pump. Tighten the hose clamps and remove the clamps from the hoses.

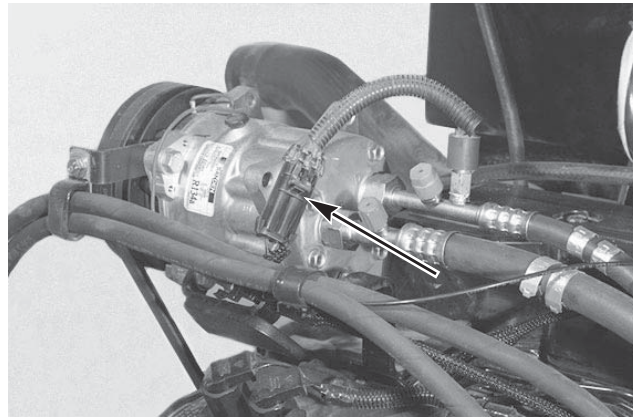
**STEP 57**



MK98G023

Turn the valve lever counterclockwise to open the fuel shut-off valve on the tank.

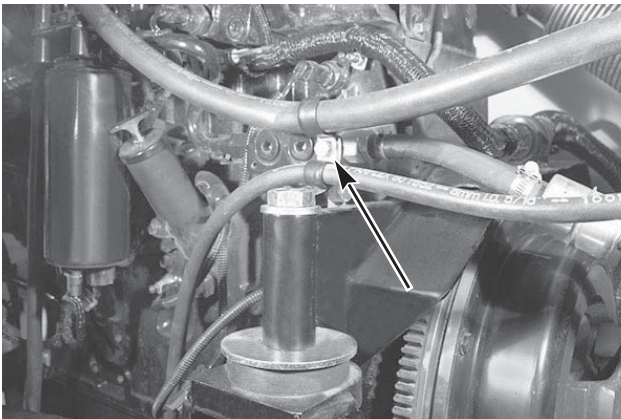
**STEP 60**



MK99J023

Install the high pressure switch wire connector on the engine wire harness.

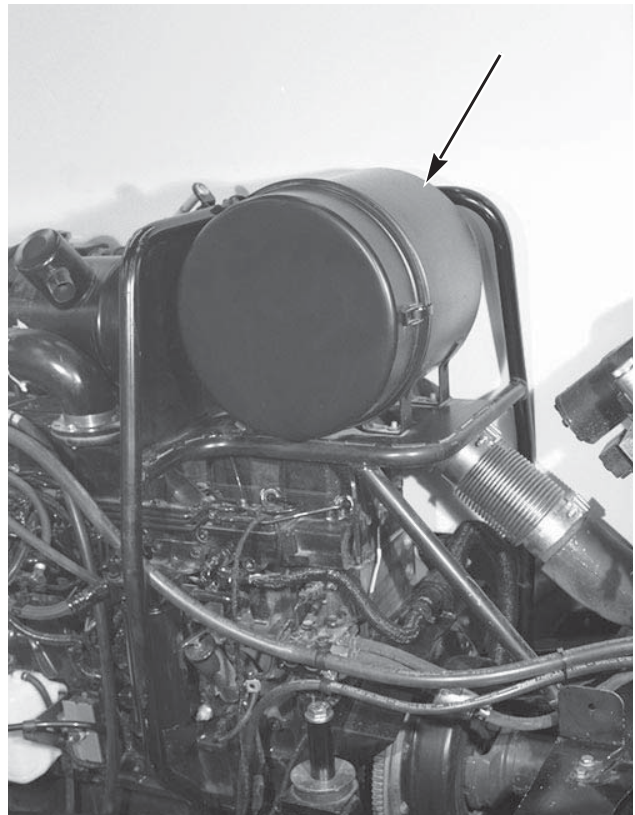
**STEP 58**



MK99J018

Use the M8 x 20 bolt, washer and nut to install the A/C suction and dryer hoses on the hose bracket.

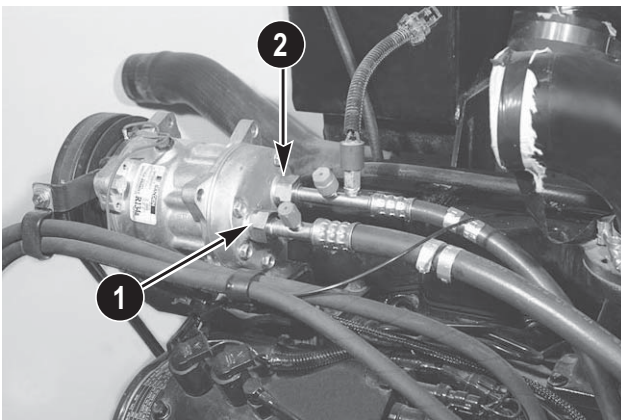
**STEP 61**



MK99J011

Install the hood support/air cleaner bracket over the top of the engine.

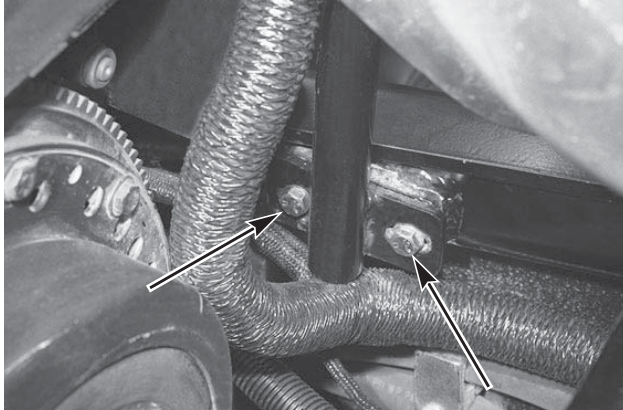
**STEP 59**



MK99J020

Lubricate new o-rings with clean A/C compressor oil and install the o-rings on the hose ends. Install and tighten the suction (1) and discharge (2) hoses on the A/C compressor.

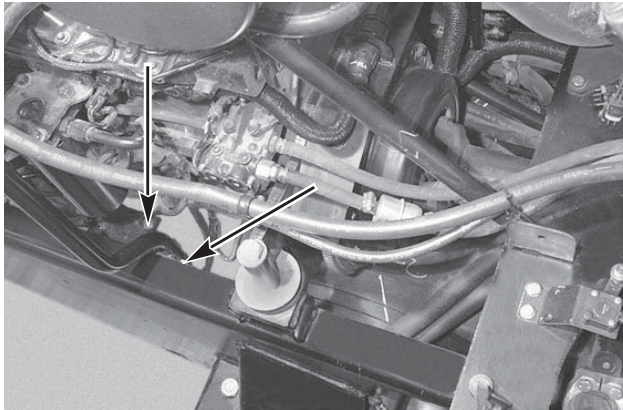
**STEP 62**



MK99J004

Use two M10 x 30 bolts to install the right side hood support bracket mount on the frame. Do not tighten the bolts.

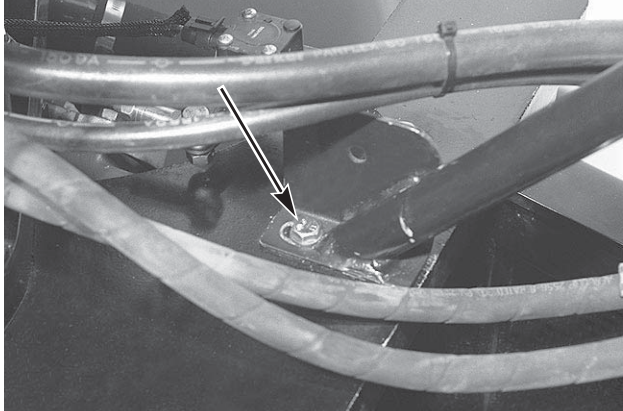
**STEP 63**



MK99J024

Use two M10 x 30 bolts to install the left side bracket mount on the frame. Do not tighten the bolts.

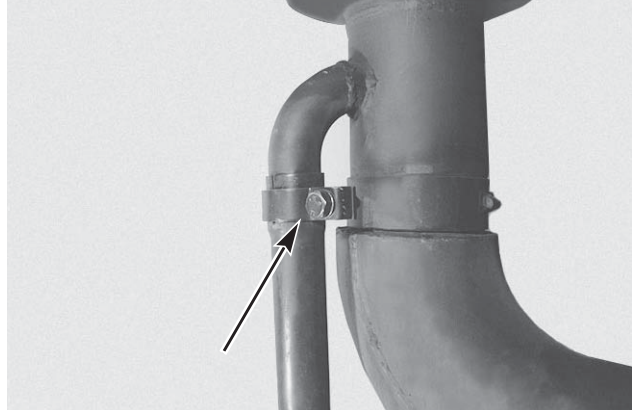
**STEP 64**



MK99J010

Use one M10 x 30 bolt to install the rear bracket mount on the frame. Tighten the five M10 x 30 mounting bolts to specifications.

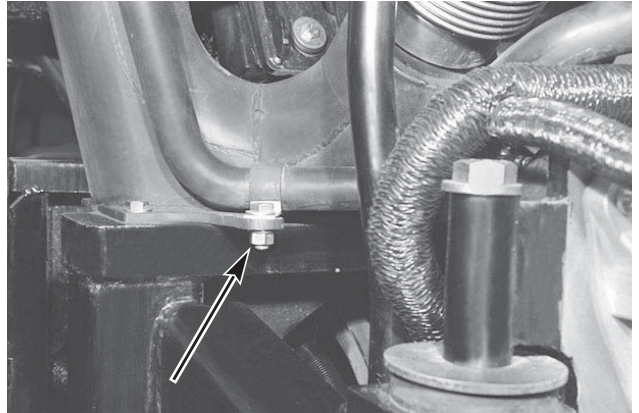
**STEP 65**



MK99J050

Install the exhaust aspirator tube on the muffler. Do not tighten the clamp.

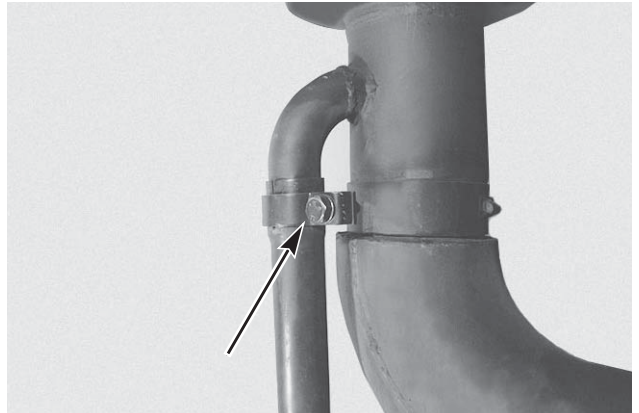
**STEP 66**



MK99J051

Use the M12 x 30 bolt, two flat washers and nut to install the aspirator tube P-clamp on the exhaust pipe mounting flange. Tighten the bolt and nut to specifications.

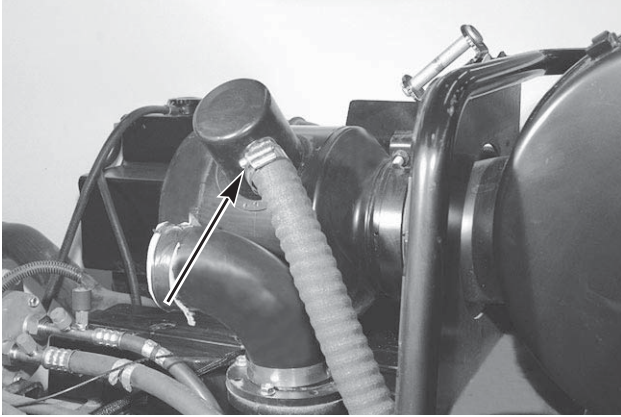
**STEP 67**



MK99J050

Tighten the aspirator tube clamp to specifications.

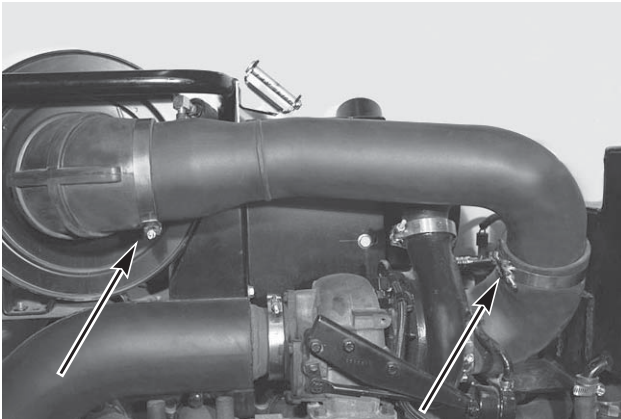
**STEP 68**



MK99J049

Install the aspirator hose on the air cleaner inlet and tighten the hose clamp.

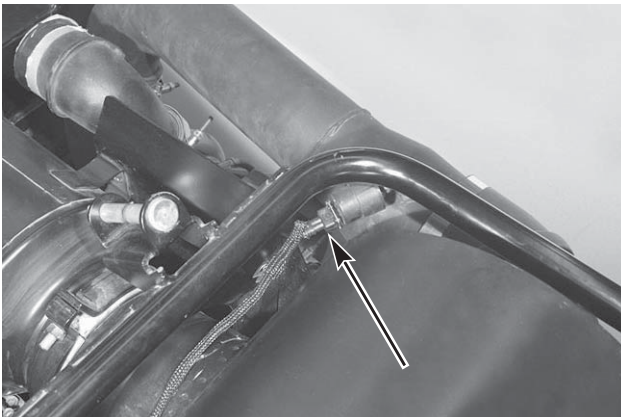
**STEP 69**



MK99J007

Install the turbo air inlet tube between the air cleaner elbow adapter and turbo inlet elbow adapter. Tighten the clamps to specifications.

**STEP 70**



MK99J008

Install the wire harness connector on the air restrictor switch.

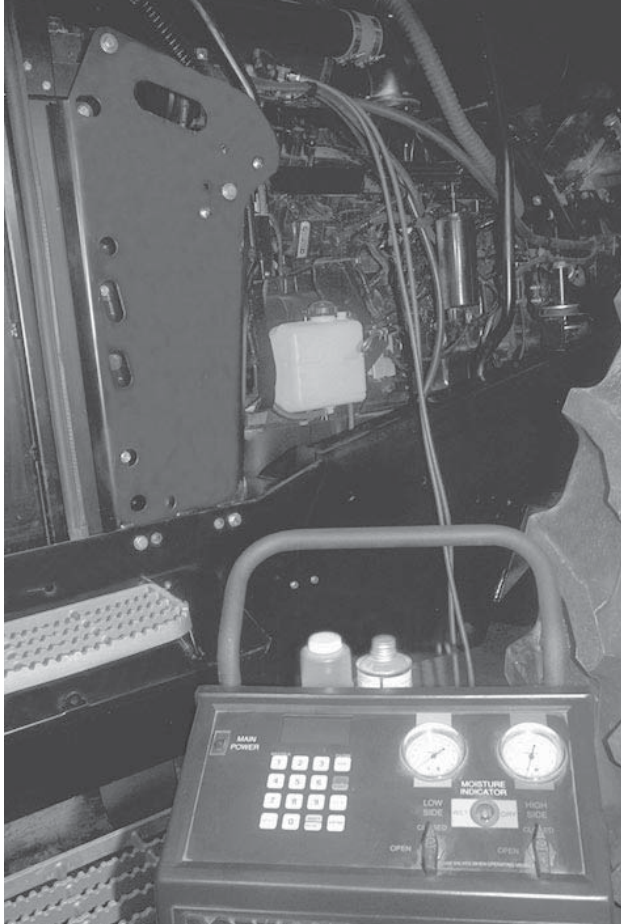
**STEP 71**



MK99J073

See Section 9008 Radiator Removal and Installation for instructions to install the radiator and cooler assembly. Fill the engine and radiator with the specified coolant.

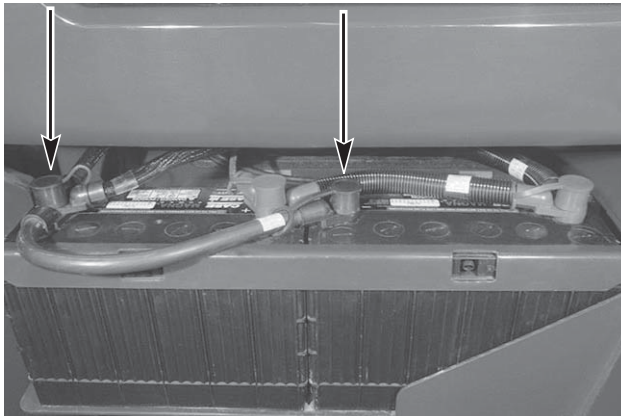
**STEP 72**



MK99J135

See Section 9001 A/C System - Recovery, Evacuation, Charging for instruction to evacuate, charge and add oil to the air conditioning system.

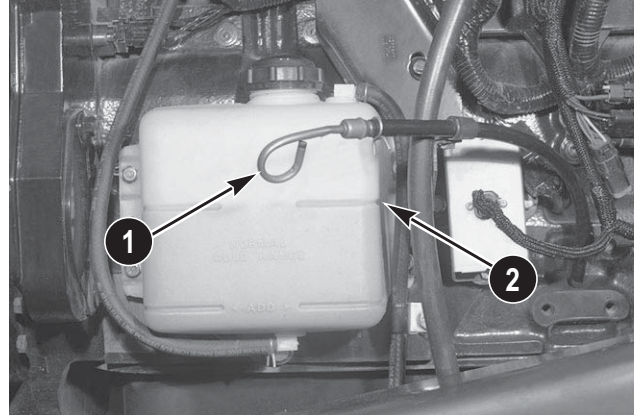
**STEP 73**



MK99K032

Open the battery access door and install the negative battery cable on both batteries.

**STEP 74**



MK99J198

Fill the engine crankcase to the correct level with the specified oil.

Start the engine and run at low idle for five minutes with the deaeration tank cap off.

Check the fuel lines, hydraulic hoses and engine coolant hoses for leaks. Check the operation of the A/C system. Shut off the engine and if necessary, add coolant to the deaeration tank. Check the engine oil level (1).

**IMPORTANT:** After the engine has been run at the normal operating temperature and allowed to cool, check the coolant level at the recovery reservoir (2) only. Do not remove the deaeration tank cap. If necessary, add coolant solution to the coolant recovery reservoir.

**STEP 75**



MK99H256

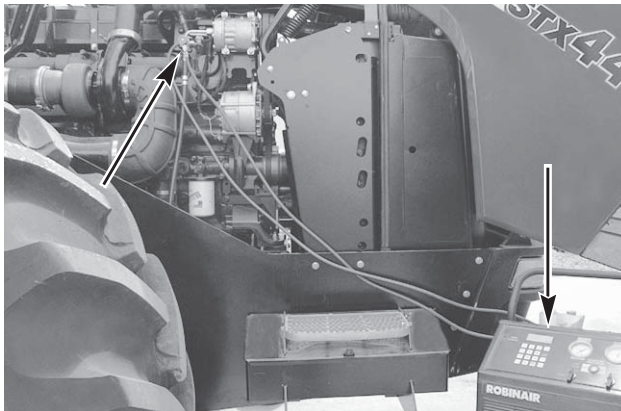
See Section 9007 Hood Removal and Installation for instructions to install the support bar and hood.

## ENGINE REMOVAL

### STEP 1

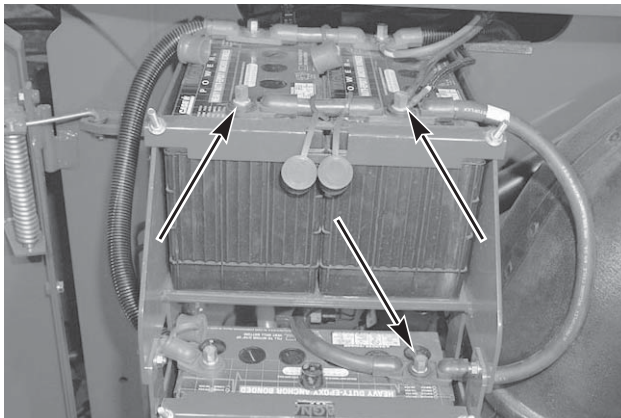
1. Park the tractor on a hard level surface.
2. Place the shift lever in PARK.
3. Shut off the engine and remove the key from the switch.
4. If necessary, drain the oil from the engine crankcase.
5. Drain the cooling system.

### STEP 2



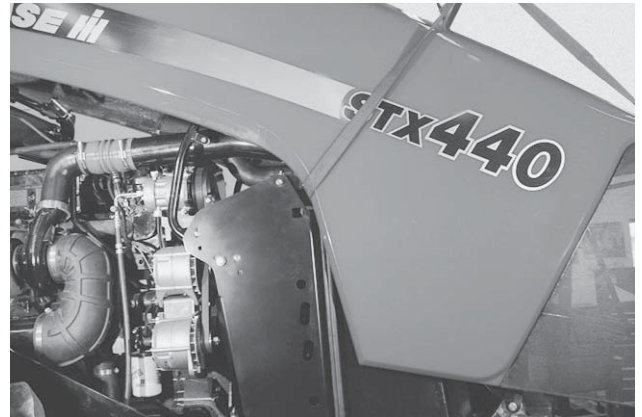
See Section 9001 A/C System - Recovery, Evacuation, Charging for instructions to discharge the air conditioning system.

### STEP 3



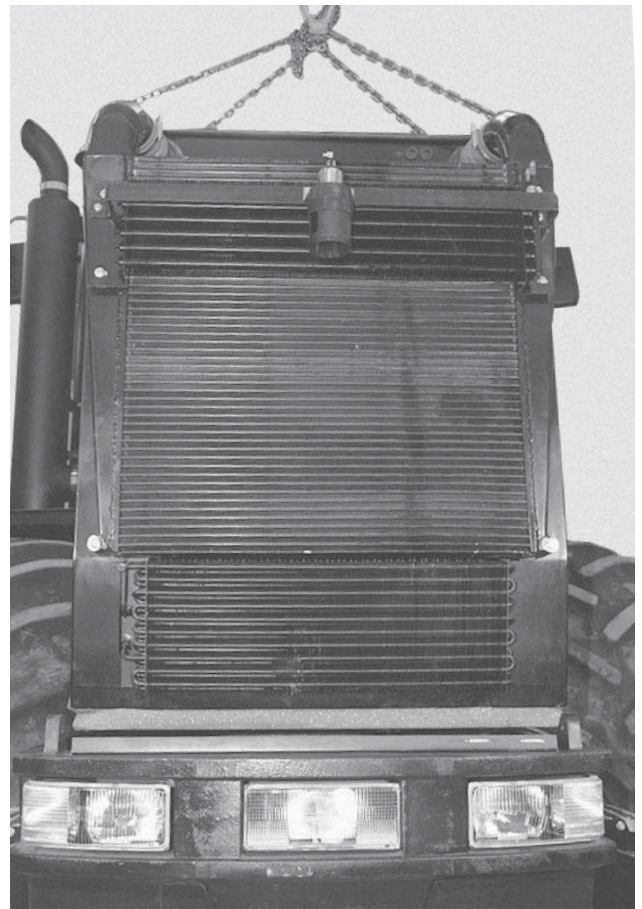
Open the battery access door and disconnect the negative battery cables from the three batteries.

### STEP 4



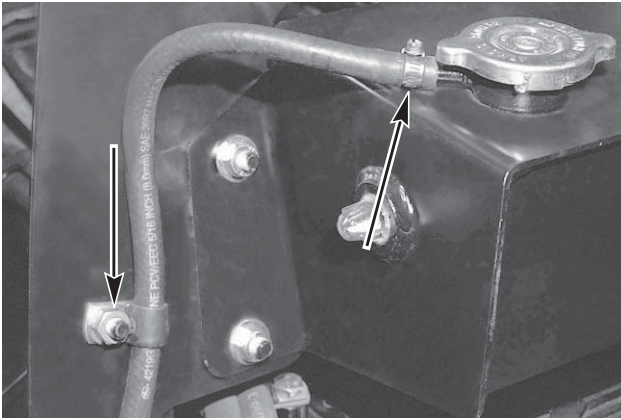
See Section 9007 Hood Removal for instructions to remove the hood from the tractor.

### STEP 5



See Section 9008 Radiator Removal for instructions to drain and remove the radiator and cooler assembly from the front frame.

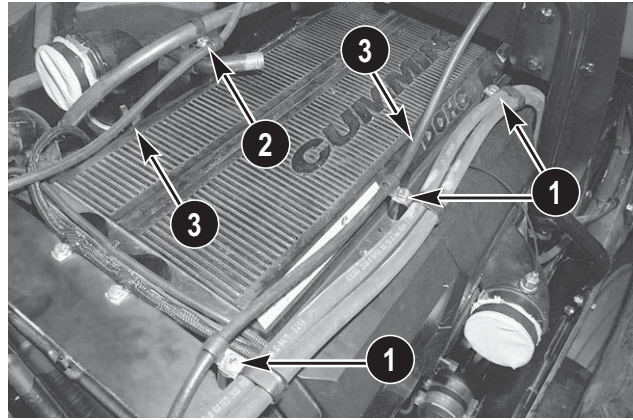
**STEP 6**



MK99H054

Remove the overflow hose from the engine coolant fill tube. Remove the P-clamp from the hood support bracket.

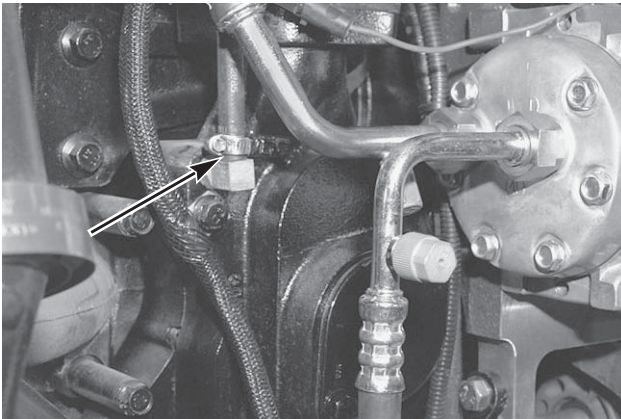
**STEP 9**



MK99H052

Remove the three left side (1) and one right side (2) P-clamps. Secure the two bleeder hoses (3) to the deaeration tank.

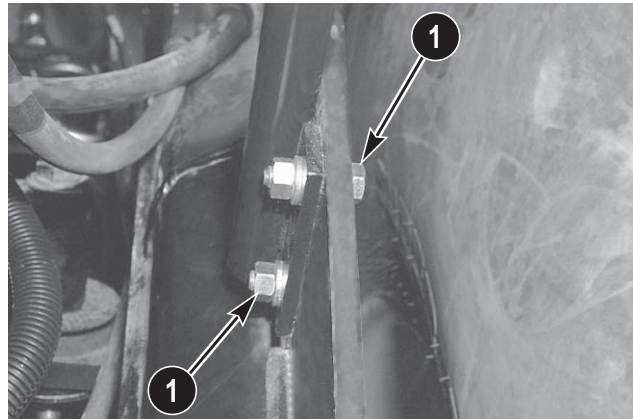
**STEP 7**



MK99H058

Remove the air bleeder hose from the right side of the engine.

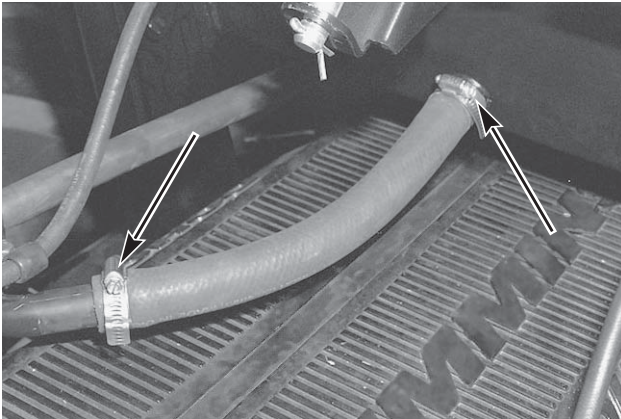
**STEP 10**



MK99H051

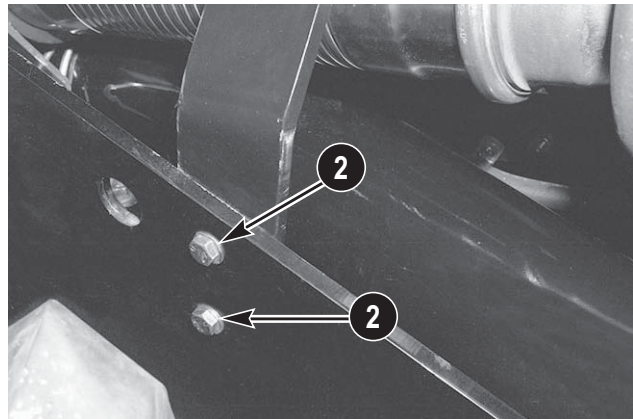
Remove the two left side (1) and two right side hood support bracket mounting bolts, washers and nuts. Remove the hood support.

**STEP 8**



MK99H053

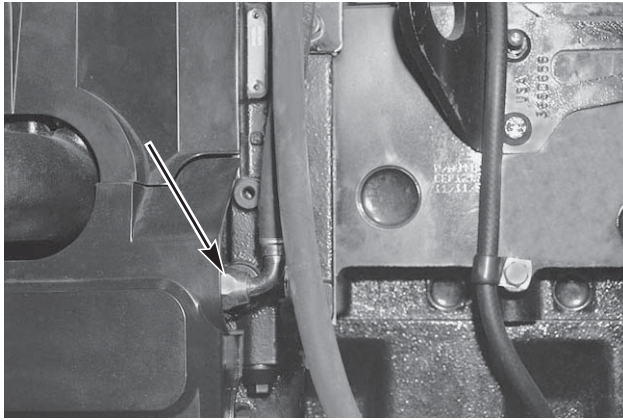
Loosen the hose clamps, remove the hose from the deaeration tank.



MK99H059

Remove the two left side (1) and two right side hood support bracket mounting bolts, washers and nuts. Remove the hood support.

**STEP 11**



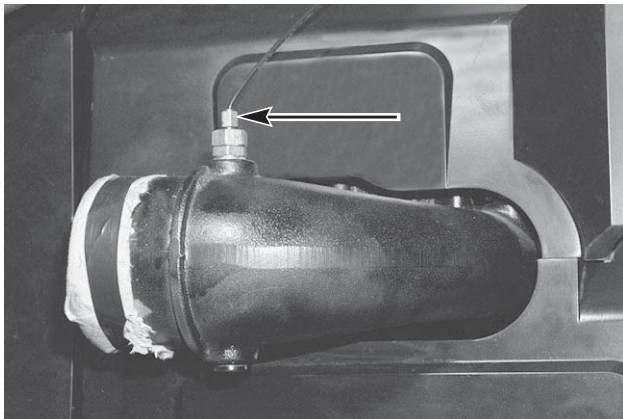
MK99H048

Remove the fuel return hose from the engine.

**NOTE:** *Some fuel will be trapped in the hose and will leak when the hose is removed.*

Install a cap on the engine fuel return port and a plug in the hose.

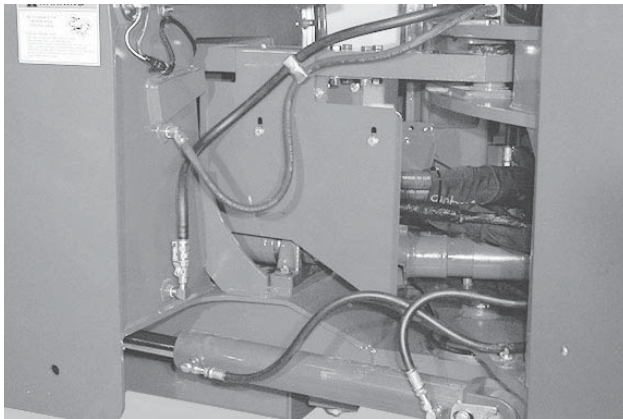
**STEP 12**



MK99H049

Remove the ether start tube from the intake manifold inlet port.

**STEP 13**

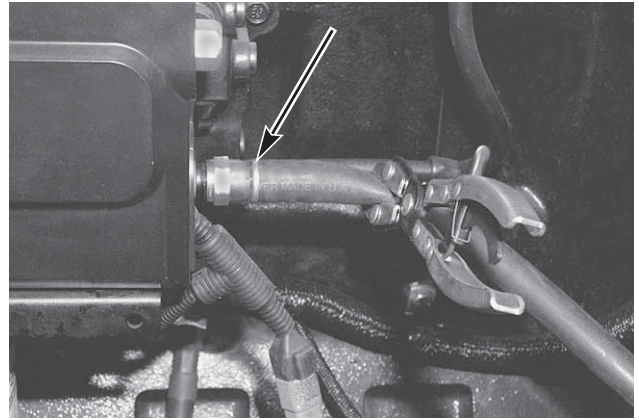


MK99G059

Shut off the fuel valve on the tank.

Rac 7-90490

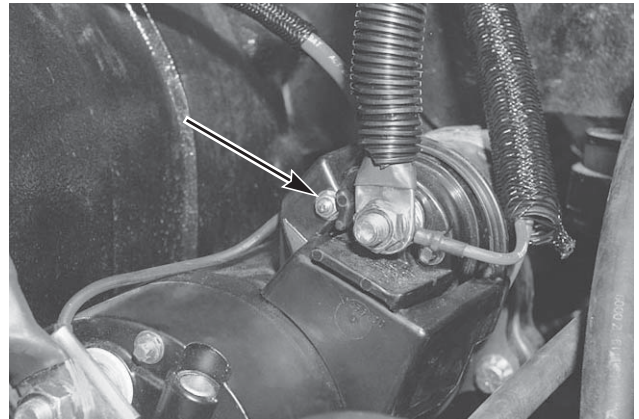
**STEP 14**



MK99H046

Install a clamp on the fuel supply hose and remove the hose from the engine. Secure the fuel hoses and ether start tube away from the engine.

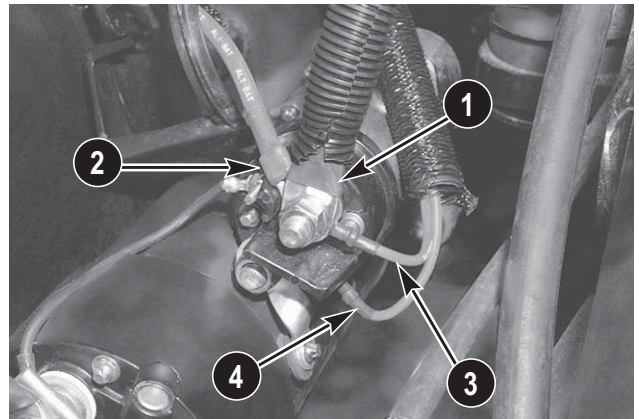
**STEP 15**



MK99H075

Remove the nut and remove the plastic cover from the starter solenoid.

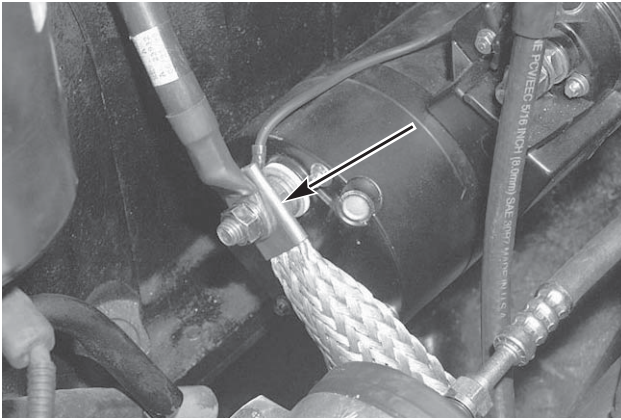
**STEP 16**



MK99H074

Remove the battery cable (1), alternator wire (2), starter switch power supply wire (3) and starter switch wire (4) from the starter solenoid.

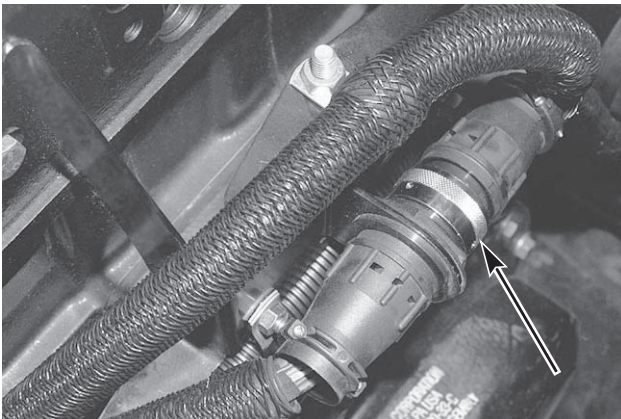
**STEP 17**



MK99H071

Remove the ground strap from the starter.

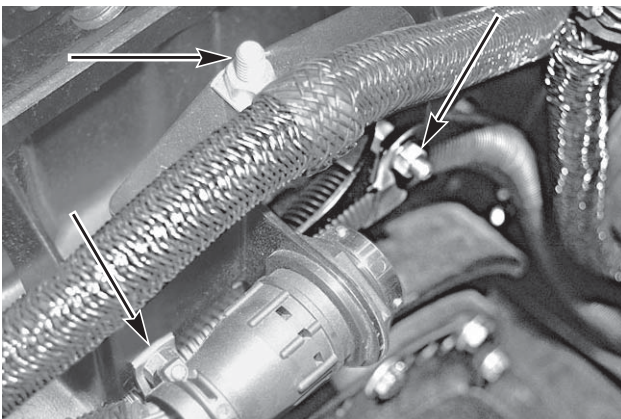
**STEP 18**



MK99H073

Remove the front frame wire harness from the engine wire harness connector.

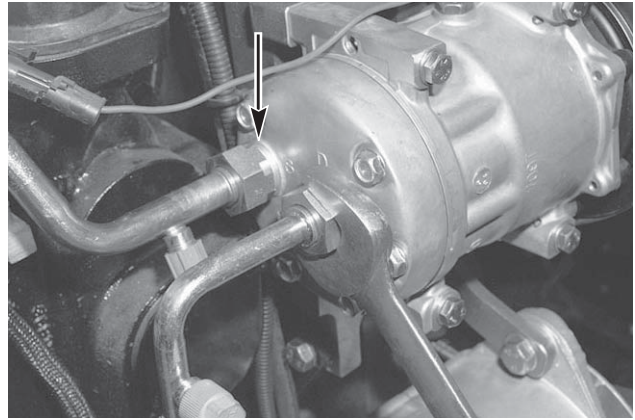
**STEP 19**



MK99H070

Remove the three P-clamps from the wire harness mounting bracket. Secure the wire harnesses away from the engine and drive shaft.

**STEP 20**

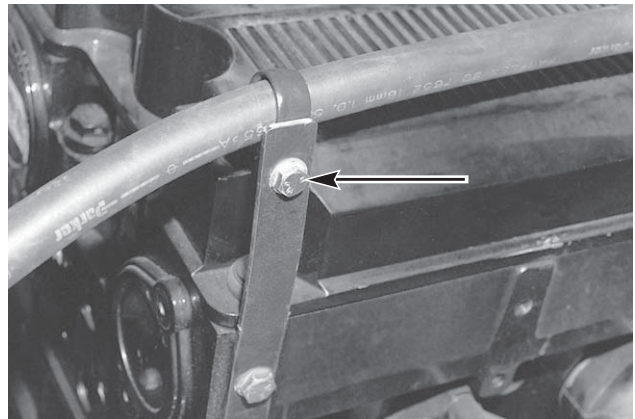


MK99H067

Remove the air conditioner compressor suction and pressure hoses.

**IMPORTANT:** *Be sure to install caps on the compressor ports and plugs in the hose ends to prevent contamination or debris from entering the system. Debris or contaminants can plug or damage the system components.*

**STEP 21**



MK99H068

Remove the air conditioning suction hose P-clamp and secure the suction hose away from the engine.



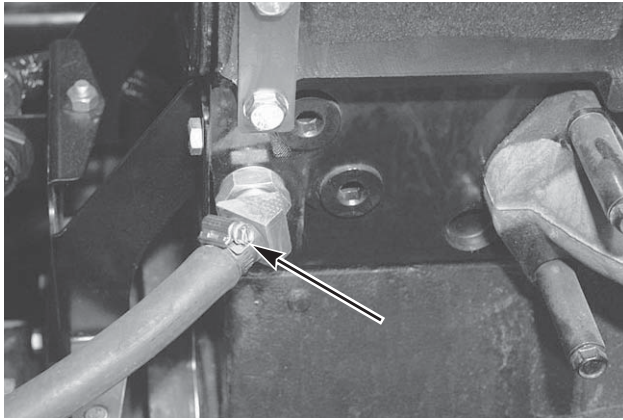
**Suggest:**

**If the above button click is invalid.**

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**Thank you so much for reading**

**STEP 22**



MK99H066

Remove the heater supply hose from the engine.

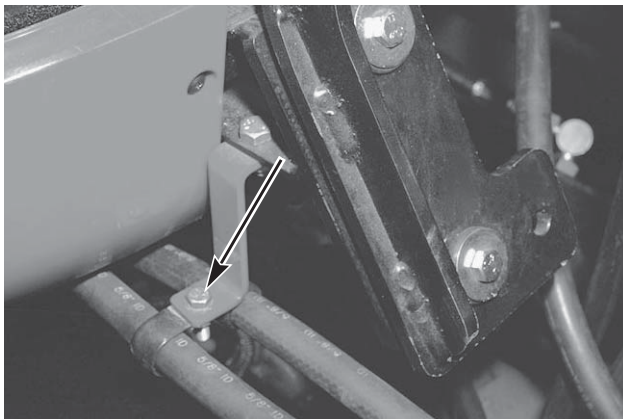
**STEP 23**



MK99H081

Remove the heater return hose from the heater core.

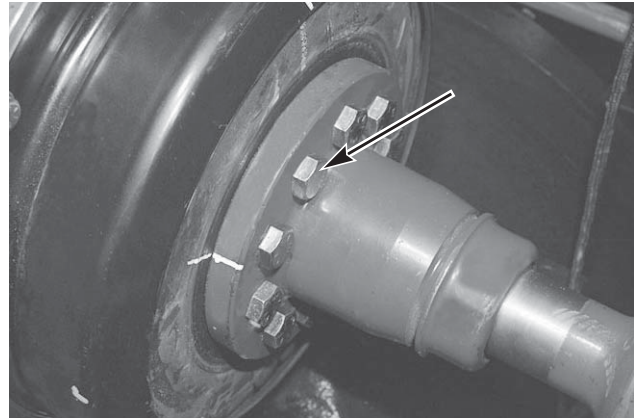
**STEP 24**



MK99H082

Remove the return hose P-clamp from the hose bracket in front of the cab. Secure the return hose to the engine.

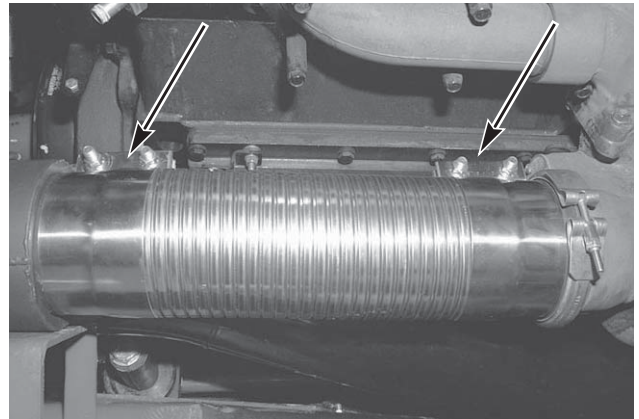
**STEP 25**



MK99E067

See Section 6001 Engine/Transmission Drive Coupler Removal for instructions to remove the drive shaft.

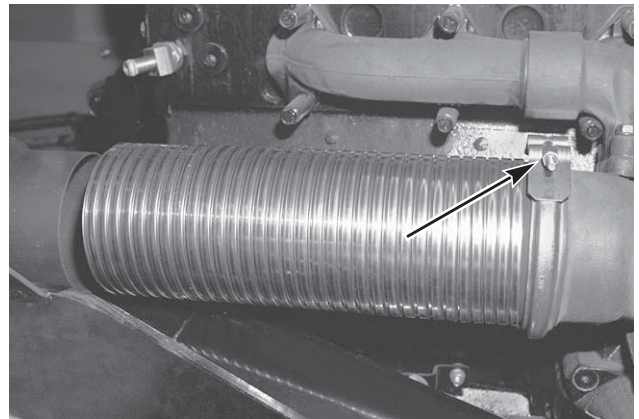
**STEP 26**



MK99H078

Remove the two band clamps from the exhaust flex tube.

**STEP 27**



MK99H076

Slide the flex tube forward to separate the flex tube from the exhaust pipe. Remove the channel clamp from the turbo flange adapter. Remove the flange adapter and flex tube.

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