SECTION EN

Engine System

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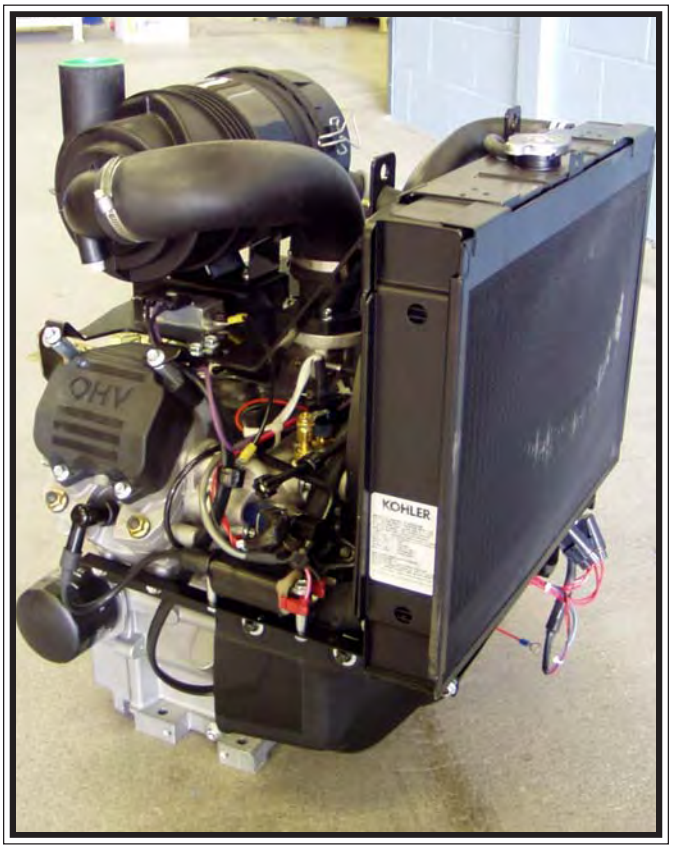
Briggs& Stratton V Twin OHV 16, 18 & 23 H.P

Kawasaki FD620D Liquid Cooled
20 H.P OHV



Kohler Aegis
26H.P Carburated & 31H.P EFI

General Instructions

⚠ WARNING

Detailed information on standard workshop and safety procedures, and general servicing operations is not included in this manual, which has been prepared to assist qualified service personnel. ODG assumes no responsibility or liability for PERSONAL INJURY or VEHICLE DAMAGE which results from any servicing procedure performed, including those instructions outlined in this manual. Before performing a servicing operation, an individual must have determined to his/her satisfaction that personal injury or vehicle damage will not result from the servicing procedure or tools selected.

NOTE

All engine service work should be performed by a qualified mechanic. Severe damage and/or reduced performance can result from an improperly serviced engine.

Basic engine servicing information is provided in this section of the manual. For more detailed servicing operations please refer to the proper engine service manual listed in the chart below.

Models	Engine	Engine Service Manual	Part Number
S, SN, BF, F RB, R, B, N	Briggs & Stratton V Twin OHV 16,18 & 23H.P	Briggs & Stratton Repair Manual V Twin OHVN	670-33 670-40-1 (23H.P)
C, CB, A	Kawasaki FD620D	Kawasaki Service Manual Four Stroke Liquid Cooled	99924-2030-03
NV, NH	Kohler Aegis 26 & 31H.P	Kohler Service Manual	TP-2527-A

Engine Oil Information

Checking the Engine Oil Level

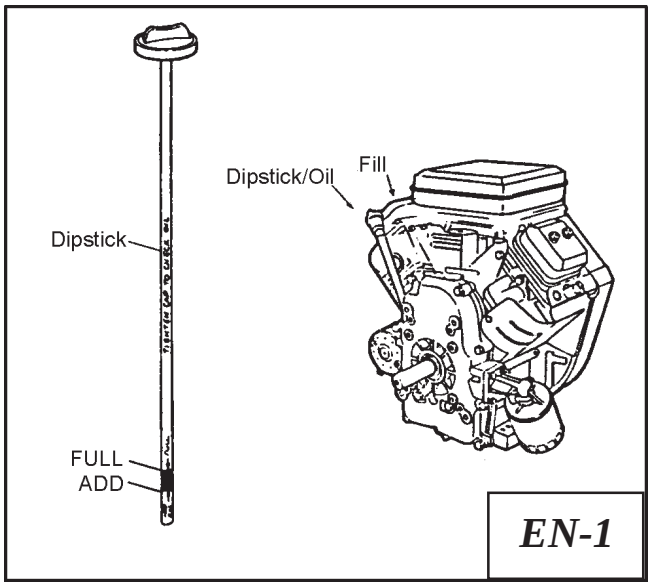
To check the oil during an operating period, shut the engine off, let it cool down and allow the oil time to drain into the sump before checking the oil level. Position the vehicle so the engine is level.

Check the engine oil level each day before operating the engine.

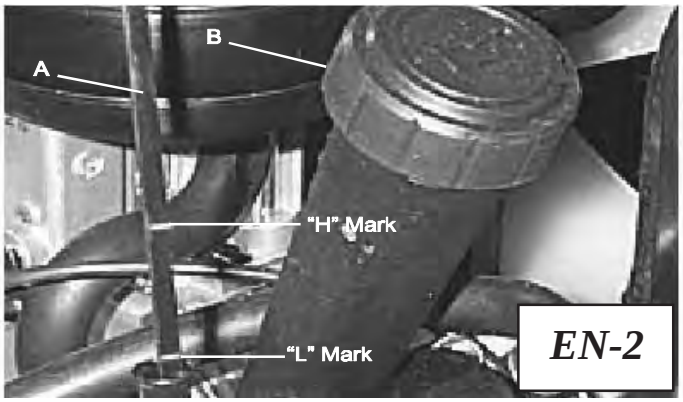
The BRIGGS & STRATTON VANGUARD ***(Figure EN-1)*** and KAWASAKI engines ***(Photo EN-2***) are equipped with a dipstick and a separate oil filler tube. To check the oil level, clean the area around the dipstick before removing. Remove the dipstick and wipe it with a clean cloth. Re-insert the dipstick and push it all the way into the tube. Remove the dipstick and check the oil level. The oil level should be between the marks. If the level has dropped, add oil to bring the level up to the FULL mark. DO NOT OVERFILL.

⚠ CAUTION

Do not run the engine if the oil level is above the FULL mark or below the ADD mark. Premature engine damage or total engine failure can occur when the oil level is not properly maintained.



EN-1



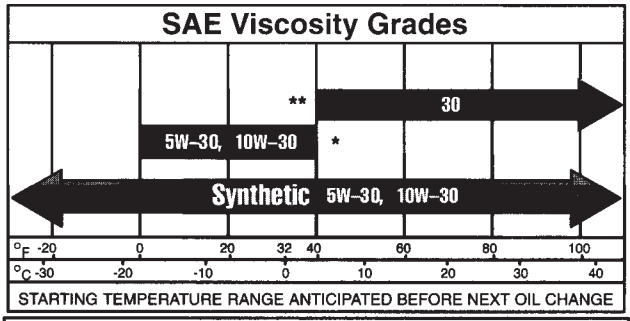
EN-2

EN-2a

Recommended Engine Oil

Use a high quality detergent oil of API (American Petroleum Institute) service class as listed below. Choose the correct viscosity of oil for seasonal driving conditions. See chart following page.

Briggs & Stratton API Service Class SE, SF or SG

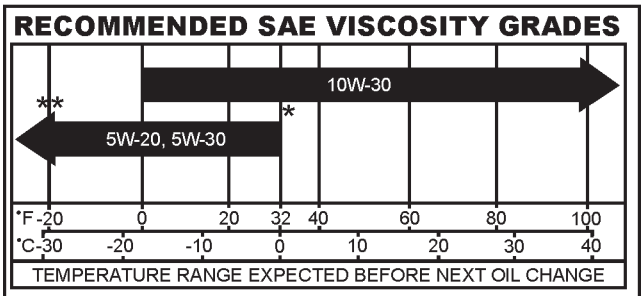


* **CAUTION:** Air cooled engines run hotter than automotive engines. The use of non-synthetic multi-viscosity oils (5W-30, 10W-30, etc.) in temperatures above 40° F (4° C) will result in higher than normal oil consumption. When using a multi-viscosity oil, check oil level more frequently.

** **CAUTION:** SAE 30 oil, if used below 40° F (4° C), will result in hard starting and possible engine bore damage due to inadequate lubrication.

Note: Synthetic oil meeting ILSAC GF-2, API certification mark and API service symbol (shown at left) with "SJ/CF ENERGY CONSERVING" or higher, is an acceptable oil at all temperatures. **Use of synthetic oil does not alter required oil change intervals.**

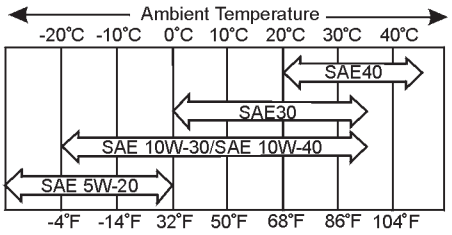
Viscosity Table - Kohler Aegis Engine



*Use of synthetic oil having 5W-20 or 5W-30 rating is acceptable, up to 4°C (40°F).

**Synthetic oils will provide better starting in extreme cold below -23°C (-10°F).

Kawasaki API Service Class SD, SE or SF



- Some increase in oil consumption may be expected when a multi-grade engine oil is used. Check the oil level frequently.

Oil Capacity (with filter)		
ARGO AVENGERS	Conquest Conquest 6x6	Vanguard, Vanguard2, Bigfoot, Response, Frontier
Kohler	Kawasaki	Briggs & Stratton
2.0 qts. 1.9 L	1.9 qts. 1.8 L	1.7 qts 1.6 L

Changing Engine Oil

During the initial engine break-in period, change the oil after the first 8 hours of operation for Briggs & Stratton and 20 hours of operation for the Kawasaki. After the break-in period, change the engine oil every 50 operating hours, or more frequently if the vehicle is operated in dusty or dirty conditions.

Draining the Engine Oil

Each engine is equipped with a drain plug for draining the oil. The drain plug location for the Kawasaki FD620D and Kohler Aegis engines is beneath the driver clutch. ***Photo EN-2a*** Remove the drive belt for easier access to the drain plug.

The oil drain plug on the Briggs and Stratton engine is located at both the front and rear of the engine block. The rear plug on the Briggs & Stratton engine is the recommended choice for draining the oil (same side as the oil filter). See IMPORTANT on the following page.

1. Start and warm up the engine so the oil will drain easily.
2. Level the vehicle so the oil will drain completely.
3. Place a suitable container under oil drain of engine and remove drain plug with a wrench: an 8 point 7/16" square socket for Briggs & Stratton engines or a 21mm socket for Kawasaki engines.

IMPORTANT

When draining the oil on the Briggs 18h.p or 16 h.p V Twin engines, it is advisable to remove it from the drain plug located between the engine and transmission (same side as the oil filter). To provide a good view of the draining area and avoid any spills into the lower body, it is best to remove the driven clutch and drive belt as well. Remove the clamp securing the brake cooling duct to its mounting bracket and tilt it up and out of the line of view of the drain plug area. Position the container beneath the drain plug and remove the plug. Refer to Removing the Drive Belt and Removing the Driven Clutch in section CS of this service guide if necessary.

NOTE

There is limited space between the engine and power pack frame. Cut down an empty plastic container to the correct height so it will fit under the engine oil drain. Make sure the container will hold the amount of oil in the engine.

A ziploc plastic bag makes a convenient oil container. It conforms to the space available and can be closed securely when the oil is drained, then lifted neatly out of the engine compartment.

PLEASE DISPOSE OF WASTE OIL PROPERLY TO CONSERVE OUR ENVIRONMENT.

4. When all the oil has been drained from the engine, clean and replace the drain plug. MAKE SURE it is properly tightened before refilling the engine.
5. See **Oil Filter Replacement Below.**

Oil Filter Replacement

During the initial engine break-in period, change the oil filter (Part No. 126-95 for Briggs & Stratton engines and Part No. 127-68 for Kawasaki engines) when the oil is changed. After that, change the oil filter every 50 hours.

Before installing the new filter, lubricate the rubber filter gasket with fresh engine oil. Screw the filter on by hand until the gasket contacts the filter adapter. Tighten 1/2 to 3/4 turn more. Add the specified oil. See previous page for oil capacities based on the engine powering your vehicle. Start and run engine to check for oil leaks. Stop engine and re-check oil level. Add oil if required.

Refilling the Engine

Refill the engine through the oil fill port with the correct amount of oil (***Photo EN-1 & 2*** on page EN-4). Make sure the appropriate grade of oil is used (page EN-5). As you add oil, frequently check the level with the dipstick. Do not overfill. Start engine. Check for leaks. Stop the engine. Check the oil level. Add oil only to the "Full" or "H" mark on the dipstick.

Air Filter

All ARGO engines are equipped with a foam precleaner and dry paper air filter element housed in an air cleaner assembly attached to the carburetor.

Wash and oil the precleaner after every 25 hours of operation or more often under extremely dusty or dirty conditions.

Check the paper air filter element every 100 hours of operation or more often under extremely dusty or dirty conditions.

For instructions to remove, clean and replace the air filter components, refer to the air cleaner section of the engine owner's manual.

Spark Plugs

Remove and inspect the spark plugs after every 100 hours of operation. Clean the plugs and reset the gap as detailed in the engine owner's manual.

Replace the spark plugs if the electrodes are corroded or damaged or if the insulator is cracked. Use the correct plug for the engine as detailed in the engine owner's manual.

Re-install the spark plugs carefully, taking care to start the threads properly. Torque the plugs to 10 - 15 ft. lbs (14 to 20 N·m). Do not over tighten.

⚠ CAUTION

When replacing spark plugs on the Kawasaki FD620D Liquid Cooled OHV Engine, it is extremely important to pay strict attention to the specification number of the engine being serviced. All Conquest vehicles manufactured prior to vehicle serial number CB17857 require spark plug part number 92070-2072. Vehicles produced from CB17857 with a specification number of HS12 or later require spark plug number 92070-2112.

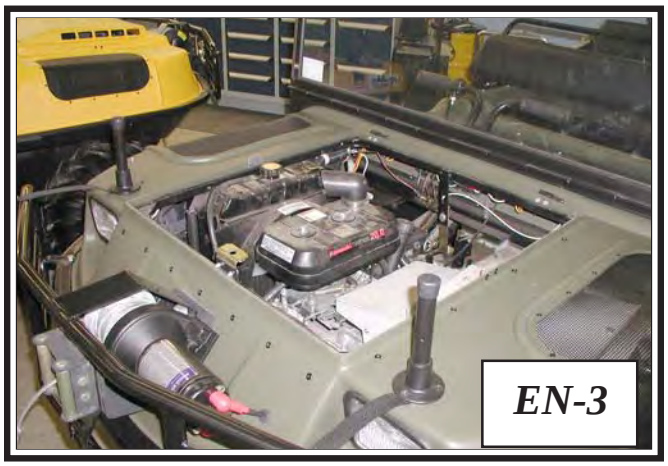
Kawasaki has made changes to the Cylinder Heads, Head composition, & spark plugs of the FD620D. The newer spark plugs are longer and will cause damage if used in an older spec. engine.

Removing the Engine (FD620D Kawasaki Liquid Cooled OHV)

NOTE

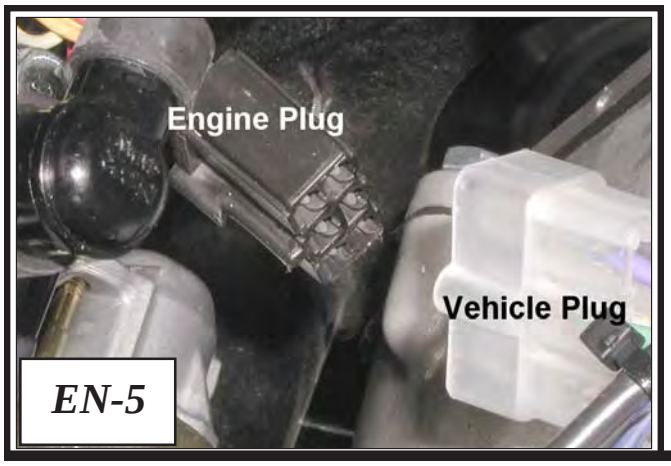
Accessing the 4 mounting bolts that secure the engine to the power pack frame requires the power pack frame to be removed from the vehicle. Both engine and transmission can be removed through the engine access opening using an overhead hoist. You may prefer to remove the transmission first before lifting engine and frame through the hood area..

1. Perform the servicing procedure, **Removing the Battery** in section ES of this service guide.
2. Locate and remove the engine access cover. ***Photo EN-3***
3. Separate the main wire harness from the nylon clips securing it at the back of the engine. ***Photo EN-4***

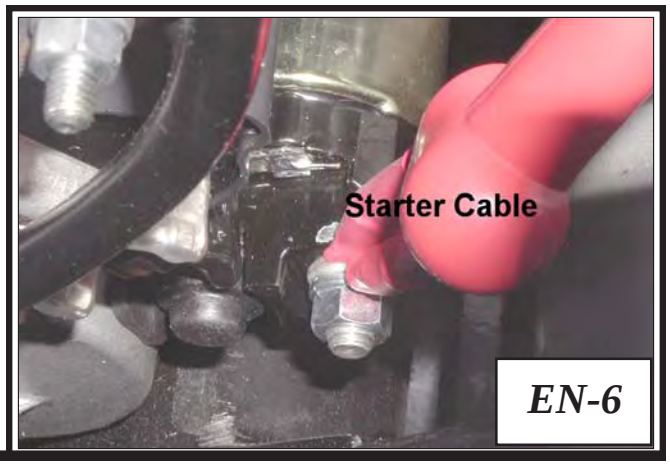

EN-3

EN-4

4. Disconnect the main engine wire harness plug located between engine and transmission. ***Photo EN-5***
5. Remove the starter cable at the electric starter. ***Photo EN-6***



EN-5



EN-6

6. Disconnect the ground wire (leading from the battery ground terminal post), at the engine.

7. Remove the radiator overflow bottle at the front of the engine.

NOTE

*Conquests manufactured prior to **CB14963** have an O.D.G overflow bottle and holder to remove. Conquests manufactured from **CB14963** utilize a Kawasaki bottle secured directly to the upper radiator bracket.*

8. Unclip the fuel line from the nylon clips at the front of the engine.

9. Remove the engine air filter cover and air element. ***Photo EN-7***

10. Remove the 7 fasteners securing the plastic base of the air filter housing. ***Photo EN-8***

⚠ CAUTION

When removing the 3 fasteners securing the base closest to the mouth of the carburetor, be aware of the 3 metal inserts in each mounting hole. These may pull out when removing the fastener. Caution is advised to ensure that they do not fall into the throat of the carburetor undetected. Severe engine damage will occur if this has not been observed.


EN-7


EN-8

11. Remove the 2 nuts securing the lower metal base of the air filter system to the carburetor, and remove.

NOTE

Once the metal base has been removed, temporarily reinstall the 2 nuts to secure the carburetor lid.

12. Disconnect the fuel line at the carburetor. ***Photo EN-9***

IMPORTANT

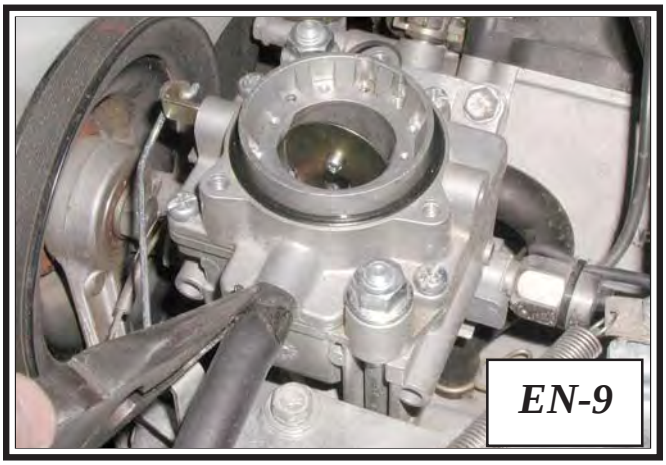
Before proceeding any further, be sure to cover the mouth of the carburetor with a rag, or other option. This will prevent anything from entering the carburetor unintentionally.

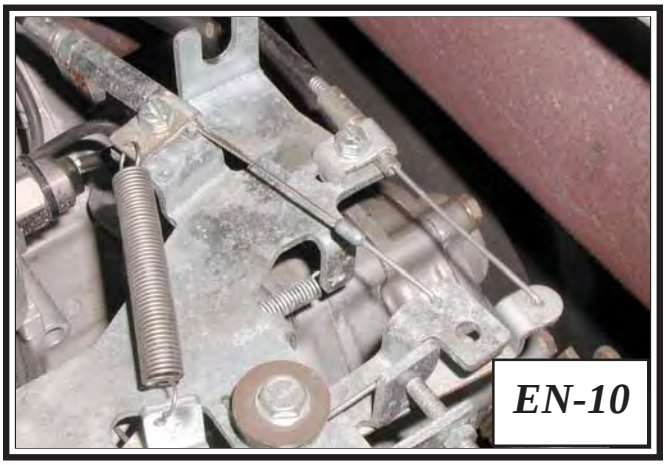
13. Disconnect the choke at the dash.

NOTE

*On Conquests manufactured prior to **CB14606**, remove the molded panel nut at the dash and slip the assembly back through the body into the engine compartment.*

*Conquests manufactured from **CB14606**, require that the choke be disconnected at the throttle/choke control panel. **Photo EN-10** The choke knob is molded to the end of the cable and does not thread off.*

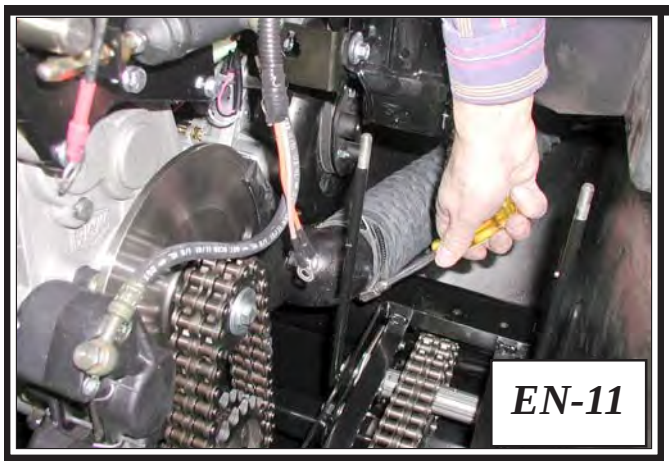

EN-9

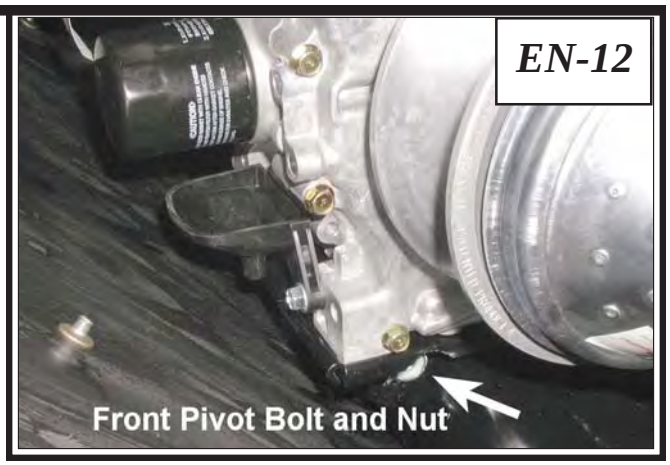

EN-10

14. Perform the servicing procedure, **Removing the Muffler and Shroud (Conquest),** steps 1-6 on page DE-3 (models prior to **C19672**) or steps 1-2 on page DE-7 (models from **C19672**).

15. Disconnect the intake hose at the brake cooling duct. ***Photo EN-11***

16. Remove the front pivot mounting bolt securing the power pack frame to the lower main frame. ***Photo EN-12***


EN-11



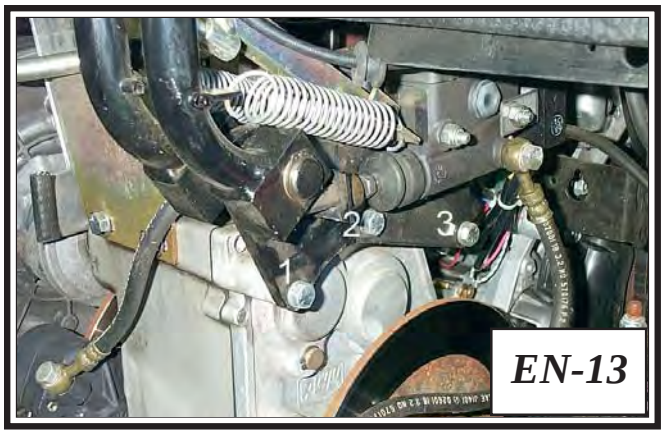
17. Perform the servicing procedure, **Removing the Drive Belt** in section CS of this service guide.

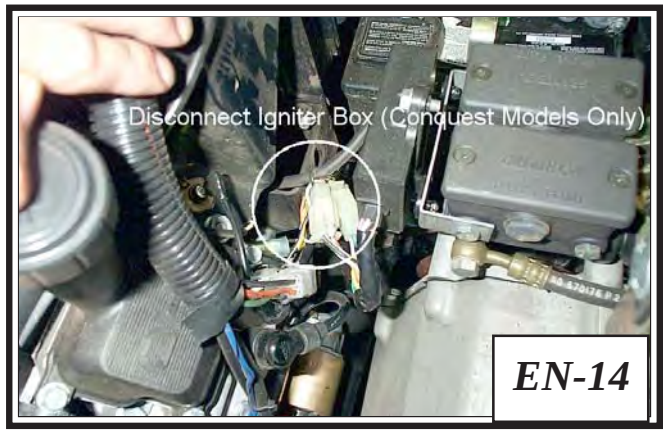
18. Perform the servicing procedure, **Removing the Driven Clutch**, in section CS of this service guide.

19. Perform the servicing procedure, **Removing the Brake Pads (Hydraulic)** steps 1-4, in section BR of this service guide.

20. Locate the (3) mounting bolts that secure the steering and master cylinder assembly to the transmission and remove them. ***Photo EN-13***

21. Disconnect the wiring at the igniter box which is mounted to the steering assembly. ***Photo EN-14***





22. Unfasten the twist grip assembly from the steering handle and remove it. ***Photo EN-15***

23. Remove the entire hydraulic brake system from the vehicle. The calipers, master cylinders and brake lines can all remain attached without the loss of any brake fluid. ***Photo EN-16***

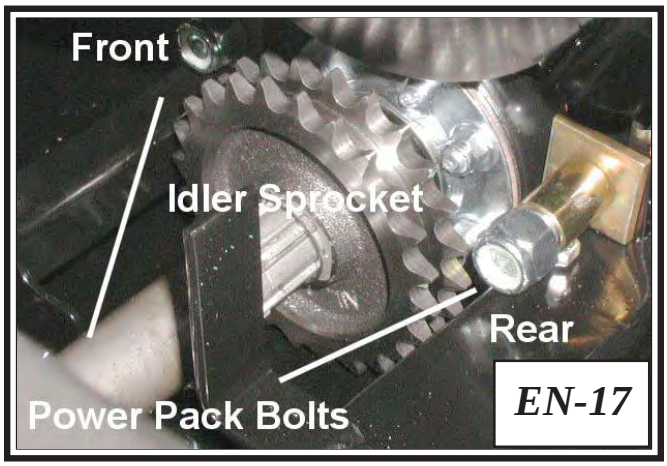

EN-15


EN-16

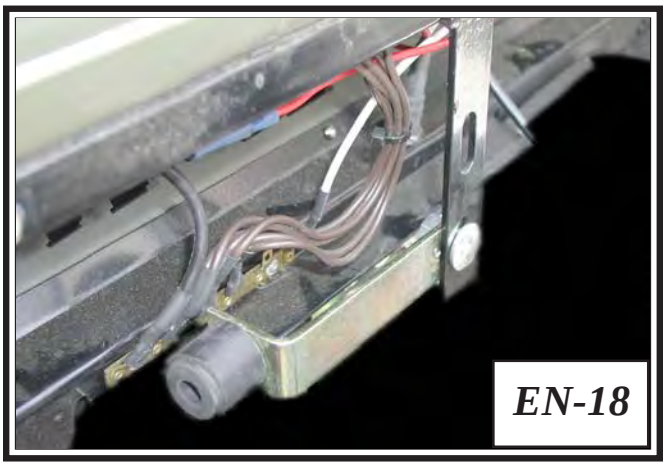
24. Perform the servicing procedure, **Idler Chain Removal,** in section WA of this service guide.

25. Loosen off the 2 power pack mounting bolts that run through the power pack frame and connect it with the lower main frame. One is located in front of the idler shaft, the other behind. ***Photo EN-17***

26. Loosen off the dash support and turn it 90 degrees. ***Photo EN-18***

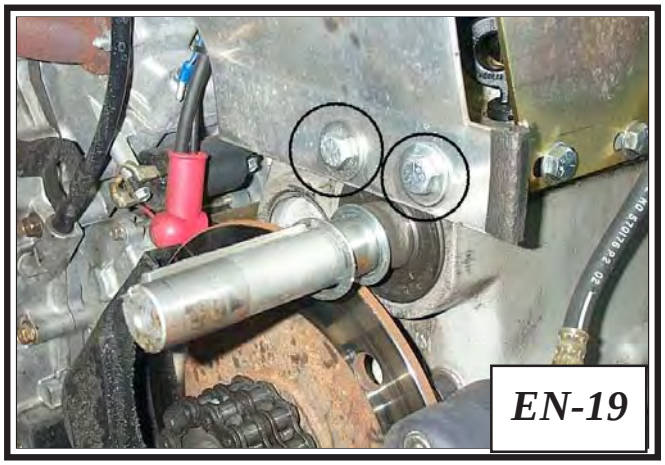


EN-17


EN-18

27. Remove the driven clutch guard from the transmission. It is secured with (2) bolts and (2) flatwashers.
Photo EN-19

28. Attach an overhead hoist to the front engine hook only. This hook is located on the exhaust manifold. ***Photo EN-20***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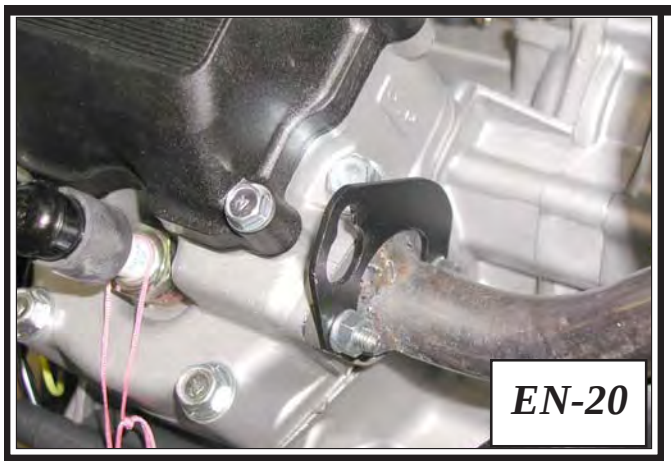

EN-20


EN-21

29. Gradually and gently begin to raise the power pack assembly out of the engine access opening. ***Photo EN-21*** You may have to pry the transmission from the driver's compartment to free it from the lower main frame.

30. Set the power pack on a clean work bench and remove the 4 bolts that secure the engine to the frame. These bolts are threaded into the engine block from below. ***Photo EN-22***

31. Using the overhead hoist, remove the engine from the power pack frame. ***Photo EN-23***


EN-22


EN-23

NOTE

If the engine is being replaced, you will need to remove all Argo components that are not available with the new engine. These will need to be reassembled to the new engine. Components include, throttle cable, choke cable, exhaust manifold, driver clutch, etc.

Assembling the Engine to the Power Pack Frame (Kawasaki)

1. Position the engine on to the power pack frame and align the holes in the block with the holes of the frame. ***Photo EN-24***

2. Apply blue 242 LOCTITE to the threads of each mounting bolt and install. Torque to specifications.

Installing the Engine (Kawasaki FD620D L/C)

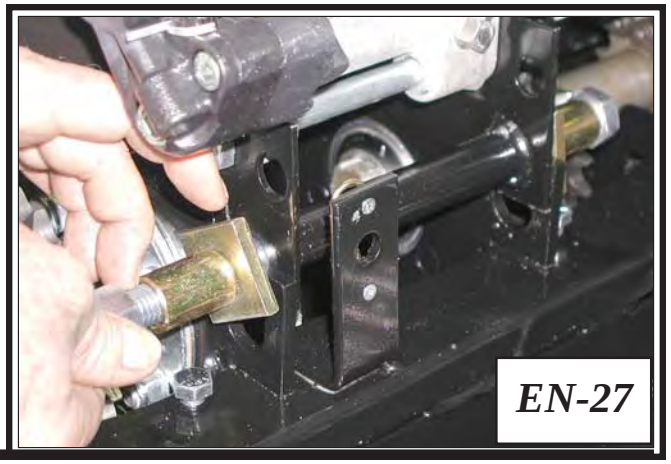
3. Attach the overhead hoist to the front engine hook and lower the power pack into the vehicle through the engine access opening. The power pack assembly will go in vertically with the transmission entering the vehicle first. ***Photo EN-25***

IMPORTANT

As the power pack is lowered into the vehicle, position yourself inside the drivers compartment. Lift up on the transmission and align the power pack frame with the vehicle main frame.

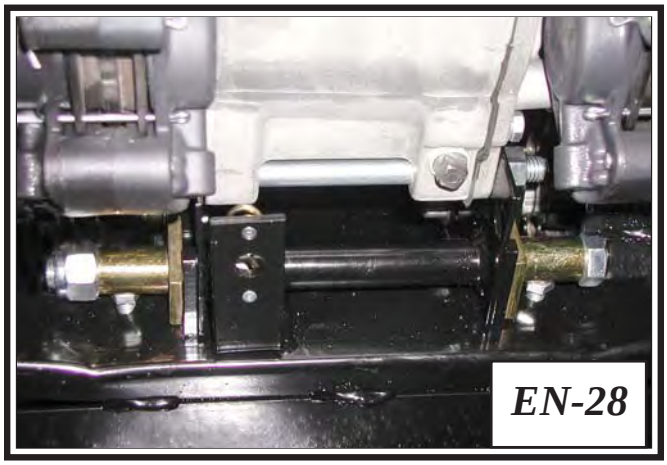
4. Position the power pack frame on to the lower main frame and install the front mounting pivot bolt. Be sure to install the square lockwasher to the mountng bolt head. ***Photo EN-26***. The bolt is installed from left to right when standing at the front of the vehicle.

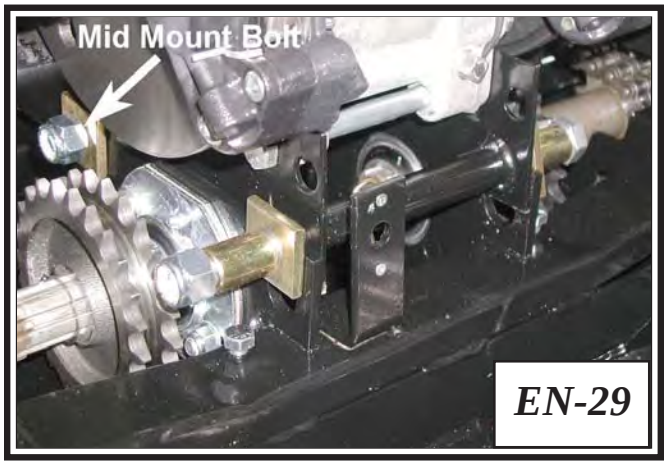
5. Assemble the rear power pack mounting bolt, complete with spacers and square washers, through the power pack frame. ***Photo EN-27***



6. Lower the rear of the power pack frame aligning the mounting bolt with the main frame. ***Photo EN-28***

7. Install the 3rd mid mounting bolt paying close attention to the hardware that is required along with it. See your illustrated parts manual. ***Photo EN-29***


EN-28



EN-29

NOTE

On vehicles manufactured prior to serial number CB17117, ensure that the air intake duct seal at the radiator, is properly seated back up against the face of the radiator assembly. ***Photo EN-30.***


EN-30

8. Reconnect the hose at the brake cooling duct.

9. Perform the servicing procedure, **Installing the Muffler and Shroud (Conquest Models),** in section DE of this service guide.

◆ On Conquests manufactured prior to **CB14963:**

i. Reattach the radiator overflow bottle holder at the front of the engine.

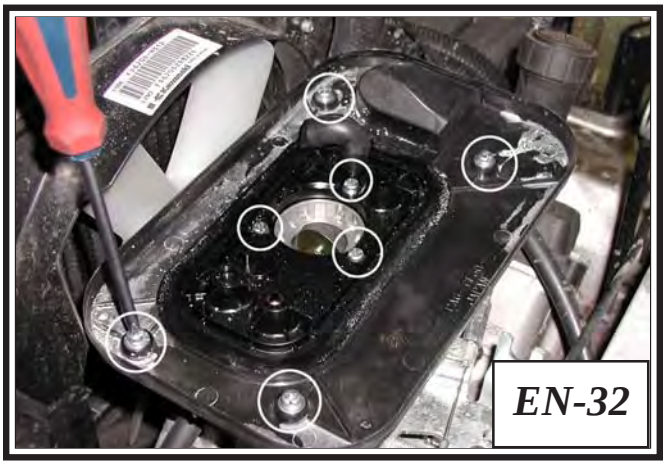
ii. Slip the over flow bottle back into the holder and connect the hose.

◆ On Conquests manufactured from **CB14963:**

i. Attach the radiator over flow bottle directly to the upper rad bracket installing the 2 required spacers at each mounting bolt. re-insert the overflow hose.

10. Reconnect the fuel line at the carburetor and secure with the hose clamp.
11. Secure the fuel line to the nylon clips at the front of the vehicle.
12. Assemble the lower metal air filter plate to the top of the carburetor. ***Photo EN-31***
13. Assemble the plastic air filter base to the top of the previously installed metal backing plate, ***Photo EN-32***, being sure to reconnect the tube from the base to the air breather assembly on top of the engine.


EN-31


EN-32

14. Reinstall the air filter element with foam precleaner, and assemble the cover to the top of the engine.
15. Reconnect the main engine wire harness located between the engine and transmission.
16. Reconnect the starter cable at the electric starter and cover with the rubber boot.
17. Secure the main engine harness to the nylon clips between the engine and transmission.
18. Reconnect the ground wire from the negative battery post terminal to the engine.
19. Reconnect the choke cable assembly.

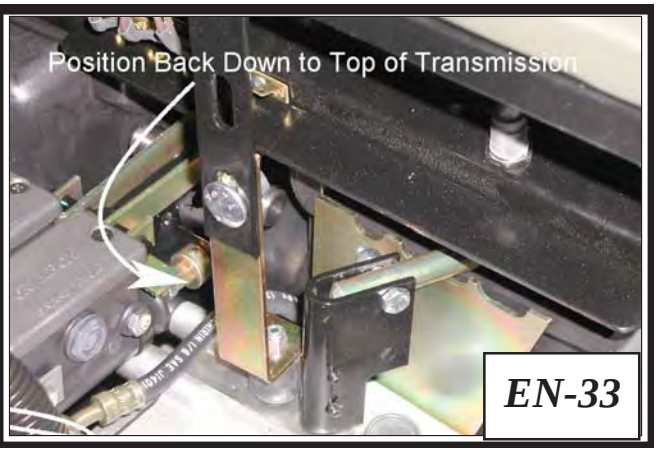
NOTE

*On Conquests manufactured prior to **CB14606**, slip the assembly back through the body at the dash and secure with the molded panel nut. It was not required that the choke was disconnected at the throttle/choke control panel for engine removal, but if it was, you will need to reattach it at the linkage as well.*

*On Conquests manufactured from **CB14606**, reconnect the cable to the throttle/choke control panel. It was not required that the choke knob was removed at the dash when the engine was prepared for removal..*

20. Reposition the adjustable dash support back down to the top of the transmission and secure the carriage bolt. ***Photo EN-33***

21. Perform the servicing procedure, **Idler Chain Installation** and **Idler Chain Adjustment** in section WA of this service guide.



EN-33

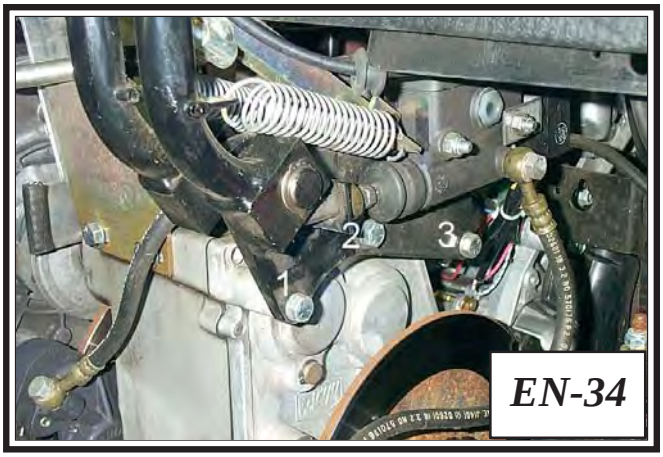
22. Reinstall the steering assembly to the transmission securing it with 3 bolts and lockwashers. ***Photo EN-34***

23. Reattach the hydraulic brake calipers. Apply blue 242 Loctite to the threads of the mounting bolts and torque to specifications. See step 2 of **Installing the Brake Pads (Hydraulic),** if necessary.

24. Reconnect the ignition system at the igniter box.

25. Reinstall the clutch guard. Apply blue 242 LOCTITE to the threads of the 2 bolts that secure it to the transmission. Install each bolt with 2 flat washers Torque to specifications.

26. Perform the servicing procedure, **Installing the Driven Clutch**, In section CS of this service guide.



EN-34

27. Perform the servicing procedure, **Installing the Drive Belt**, In section CS of this service guide.

28 Perform the servicing procedure, **Hydraulic Brake Plunger Adjustment**, in section BR of this service guide.

29. Perform the servicing procedure, **Installing the Battery,** in section ES of this service guide and reconnect the wiring.

30. Perform the servicing procedure, **Installing the Firewall**, in section VB of this service guide. See IMPORTANT on following page.

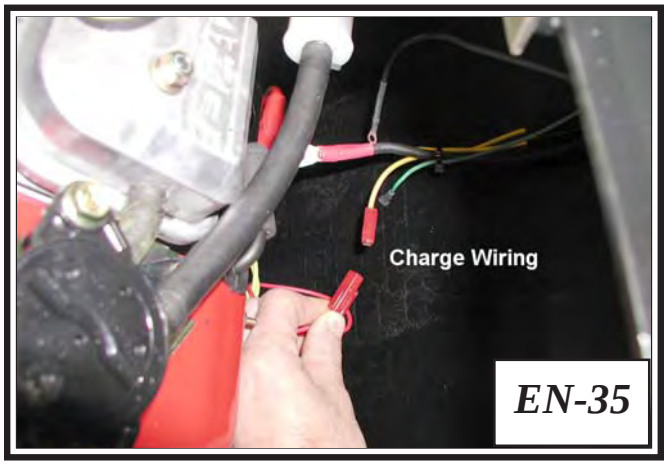
IMPORTANT

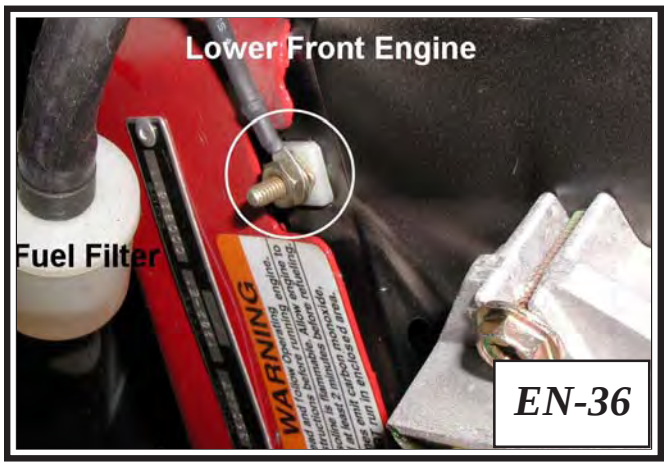
Ensure that all levels of fluid (oil and antifreeze), in engine are correct before starting the vehicle. Run the engine for 5 minutes and recheck all levels. Add or remove as necessary.

Removing the Engine (Briggs & Stratton 16 h.p & 18h.p)

Unlike the Kawasaki FD620D L/C OHV engine, the Briggs & Stratton 16h.p and 18h.p engines may be detached from the power pack frame without having to remove the frame from the vehicle to access the mounting bolts. The engine may then be lifted independently through the engine access opening using an overhead hoist. However, initial preparations and disassemblies must be followed first.

1. Perform the servicing procedure, **Removing the Firewall**, in section CS of this service guide.
2. Remove the hood.
3. Disconnect and remove the battery.
4. Perform the servicing procedure, **Removing the Air Intake Shroud (Briggs Models),** in section DE of this service guide.
5. Perform the servicing procedure, **Removing the Drive Belt**, in section CS.
6. Perform the servicing procedure, **Driven Clutch Removal**, in section CS of this service guide.
7. Remove the driven clutch guard.
8. Disconnect the hose at the brake cooling duct.
9. Remove the gear clamp that secures the brake cooling duct to its mounting bracket, located between engine and transmission. Remove the duct.





10. Perform the servicing procedure, **Removing the Muffler(Briggs models)** on page DE-11 (Bigfoot models) or DE-8 all other Briggs models.
11. Unplug the charging wire at the front of the vehicle. ***Photo EN-35***
12. Disconnect the isolated ground wire at the front of the engine. ***Photo EN-36***

13. Disconnect the throttle cable at the engine.
14. Disconnect the choke at the engine.
15. Locate the fuel filter at the front of the vehicle and disconnect the fuel line. Be sure to clamp the fuel line with fuel line crimpers to prevent any fuel from leaking from the tank into the lower body.

IMPORTANT

Never stick anything into the fuel line to plug it. This could damage the fuel line leading to stray pieces of fuel line rubber being introduced into the fuel system when the fuel line is reconnected.

16. Disconnect the ground cable at the engine. ***Photo EN-37***
17. Disconnect the power cable for the electric start.

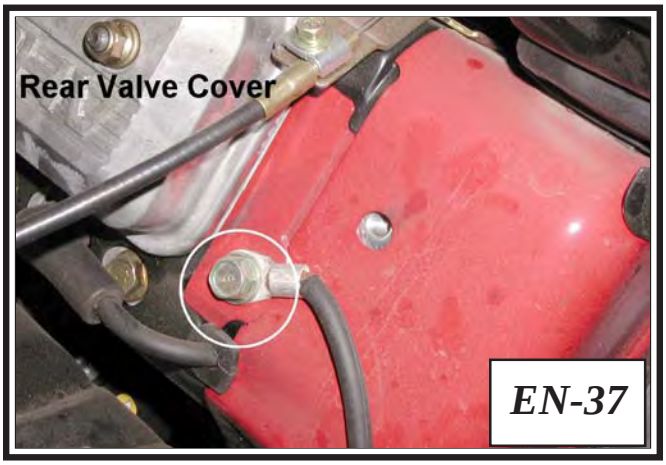
◆ On vehicles manufactured prior to **BF12097, RB17665, S12222 & SN12227:**

i. Disconnect the starter cable at the starter motor.

◆ On vehicles manufactured from **BF12097, RB17665, S12222 & SN12227:**

i. Disconnect the power cable at the starter relay. The starter relay is attached to the front of the engine close to the regulator.

18. Remove all 4 mounting bolts at the lower frame. The engine is secured with 4 nylon locknuts.
19. Lift the engine out of the vehicle using an overhead hoist. ***Photo EN-38***



NOTE

If the engine is being replaced, all Argo components must be removed first and reinstalled on the new engine. These include driver clutch, muffler, exhaust manifold and any return springs.

Installing the Engine (Briggs Models)

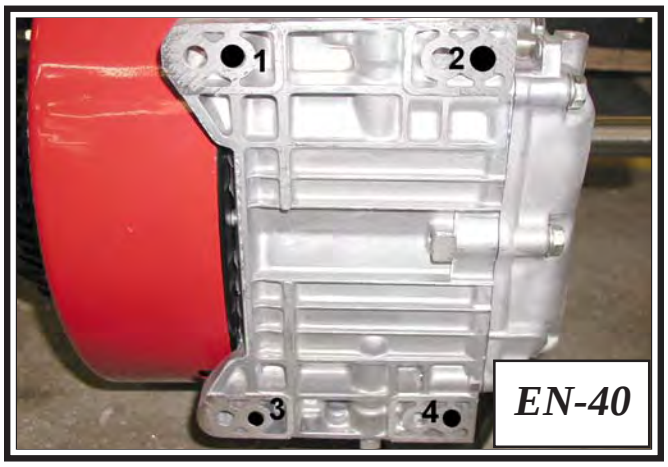
1. Attach the overhead hoist to both engine hooks and lower the engine into the vehicle. ***Photo EN-39***

2. Secure the engine to the power pack frame with 4 bolts, 8 flat washers and 4 nylon locknuts. Refer to the illustrated parts manual for correct hardware orientation. Torque to specifications.

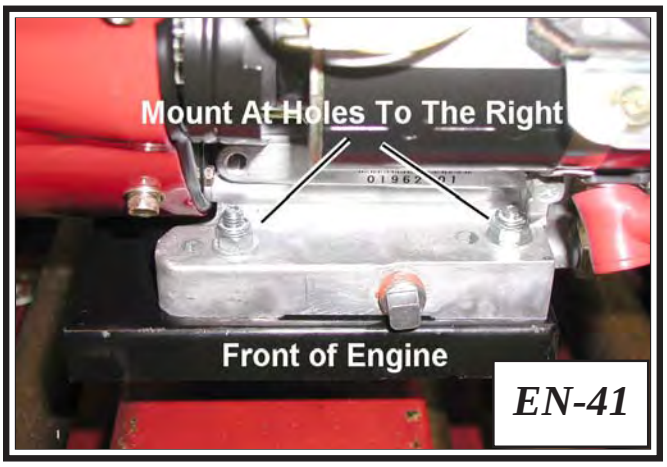

EN-39

IMPORTANT

You will notice 8 mounting holes in the block of the engine. It is important that the correct set of holes is used for clutch offset and belt alignment. Use the holes as illustrated in *Photo EN-40 & 41* below.



EN-40



EN-41

3. Reconnect the power to the electric starter.

◆ On vehicles manufactured prior to **BF12097, RB17665, S12222 & SN12227:**

i. Connect the starter cable at the starter motor.

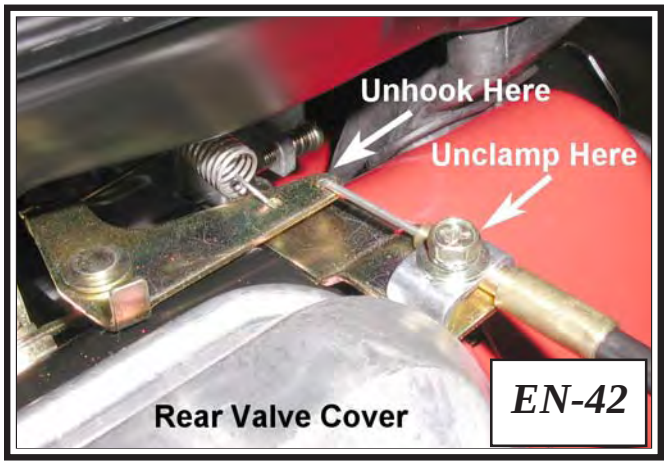
NOTE

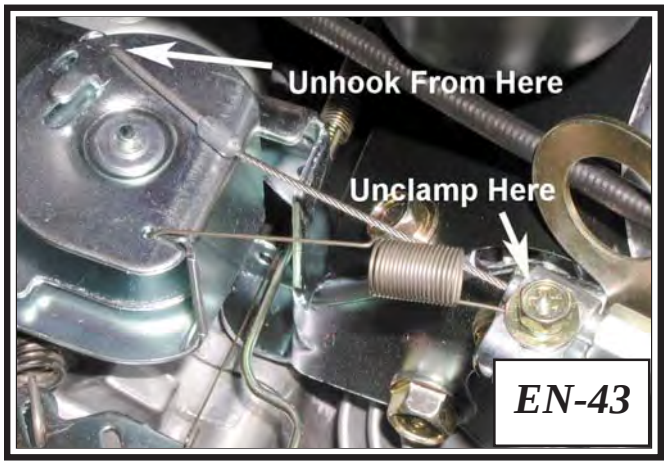
Reattach the clip that secures the starter cable at the front of the engine.

◆ On vehicles manufactured from **BF12097, RB17665, S12222 & SN12227:**

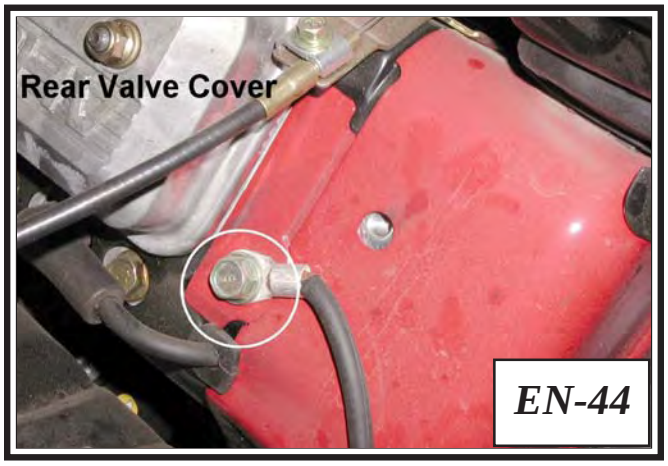
i. Connect the power cable at the starter relay.

4. Reattach the ground wire to the isolated ground at the front of the engine, and plug the charging wire from the main wire harness back into the engine wire harness.
5. Reconnect the fuel line at the fuel filter.
6. Place the brake cooling duct to the top of the mounting bracket and secure with the gear clamp.
7. Reattach the brake cooling hose to the brake cooling duct and secure with another gear clamp.
8. Assemble the choke cable to the carburetor linkage. ***Photo EN-42***
9. Assemble the throttle cable to the carburetor linkage. ***Photo EN-43***





10. Reattach the ground wire running from the battery terminal, back to the engine. ***Photo EN-44***
11. Perform the servicing procedure, **Installing the Muffler (BriggsModels)**,on page DE-11 (Bigfoot)or DE-10 (others).
12. Mount the driven clutch guard at the transmission. Apply blue 242 LOCTITE to the threads of both mounting bolts and install with 2 flat washers. Torque to specifications.



13. Perform the servicing procedure, **Installing the Driven Clutch** in section CS of this service guide.
14. Perform the servicing procedure, **Installing the Drive Belt,** in section CS of this service guide.

15. Perform the servicing procedure, **Installing the Intake Duct (Briggs Models)**, in section DE of this service guide.
16. Install the battery and reconnect battery terminals.
17. Perform the servicing procedure, **Installing the Firewall,** in section VB of this service guide.

IMPORTANT

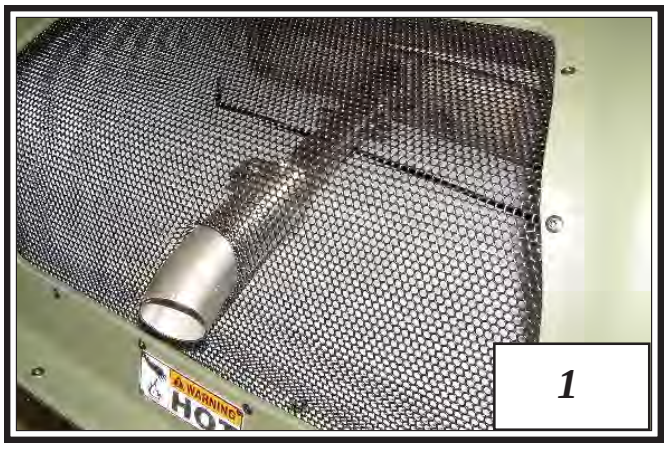
Before starting the engine check the engine oil level and re-check all electrical connections.

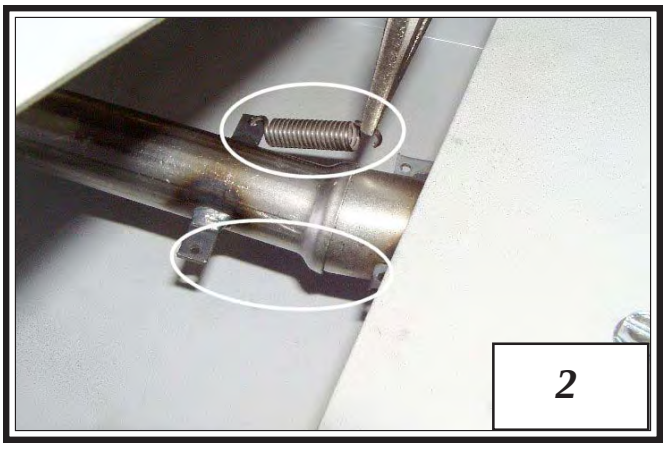
SECTION EN

Supplement Pages

Removing the Engine (Kohler Aegis N.A)

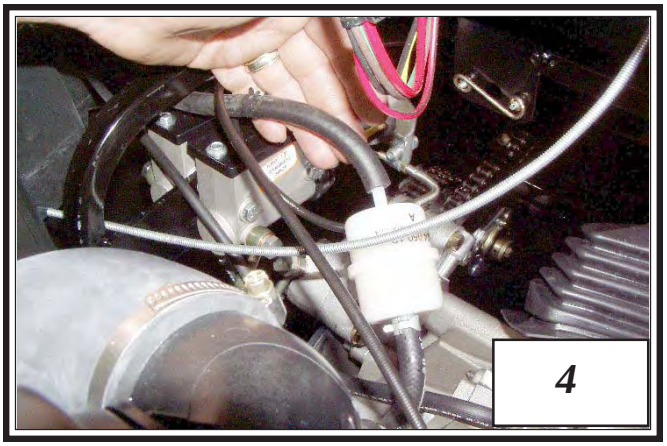
1. Locate the tailpipe assembly and detach the connecting springs between the tailpipe assembly and muffler. ***Photo 1 & 2*** Pull the assembly out through the hood area.





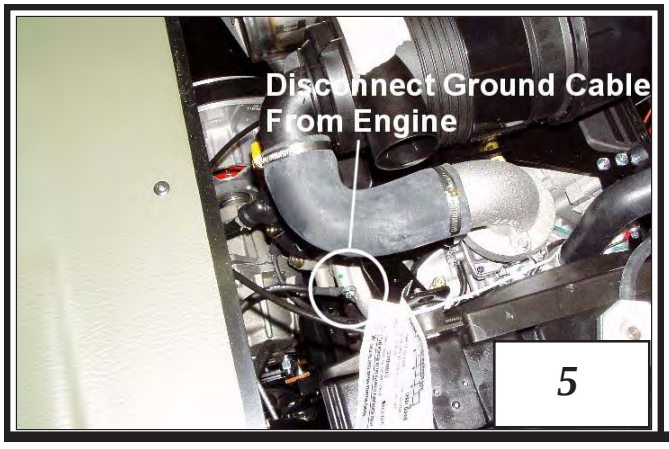
2. Remove the heat deflector shield covering the muffler. ***Photo 3***

3. Disconnect the fuel line from the fuel filter at the carburetor. ***Photo 4***



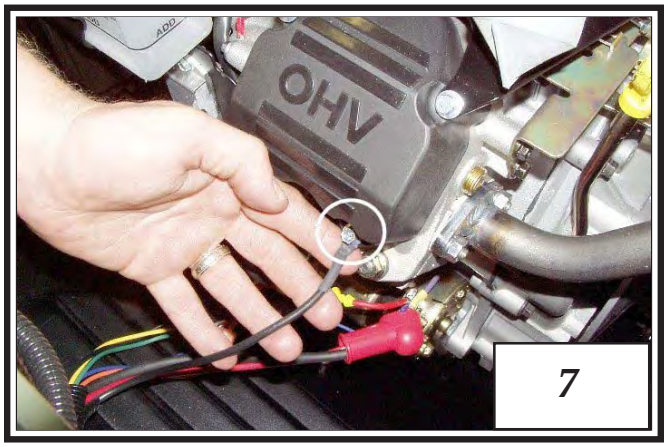
Disconnect All Wiring

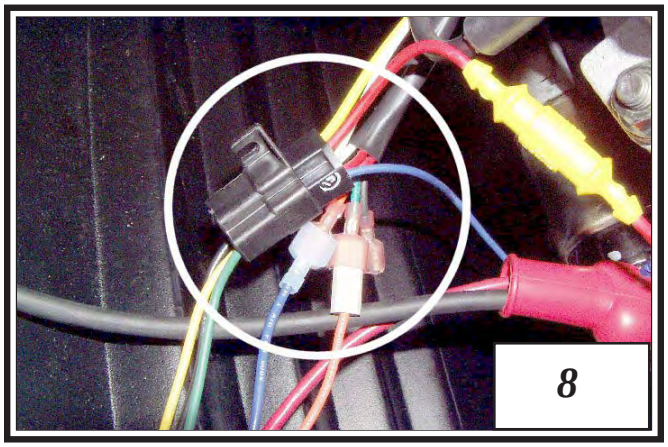
4. Disconnect the ground cable at the engine. ***Photo 5 & 6***



5. Disconnect the ground wire attached at the front of the engine to the valve cover fastener. ***Photo 7***

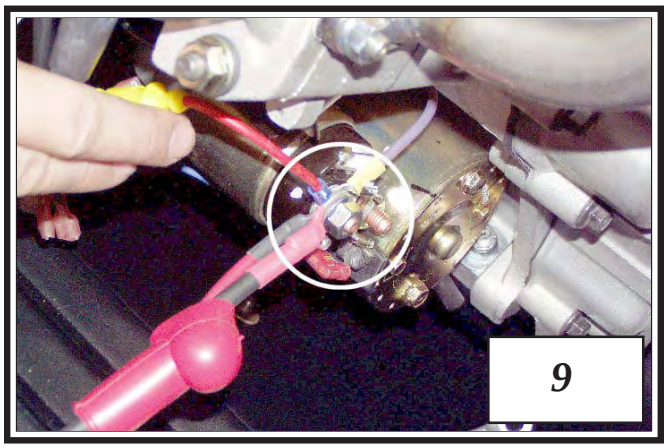
6. Locate the main wire harness plug-ins at the front of the engine compartment and disconnect all wires. ***Photo 8***

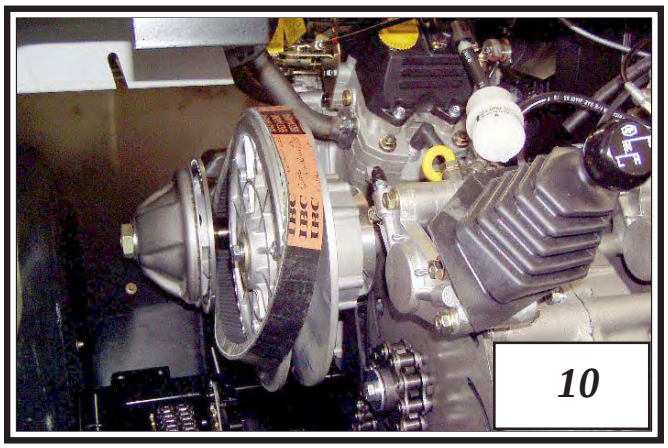




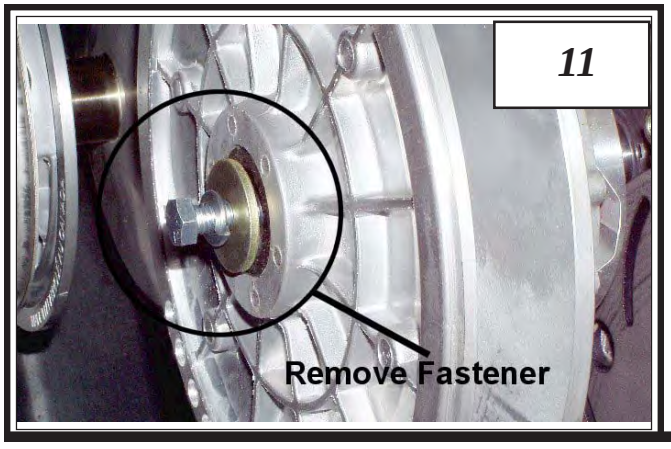
7. Locate the starter at the front of the engine compartment and disconnect both red and black power wires from the starter solenoid. ***Photo 9 These wires are enclosed within a red rubber boot.***

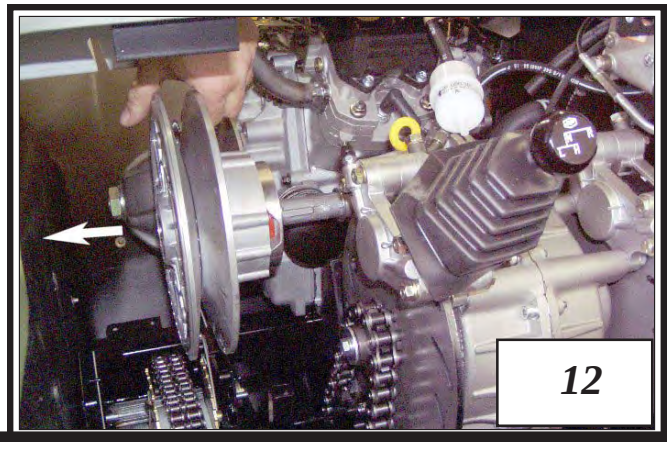
8. Remove the drive belt between engine and transmission. ***Photo 10***





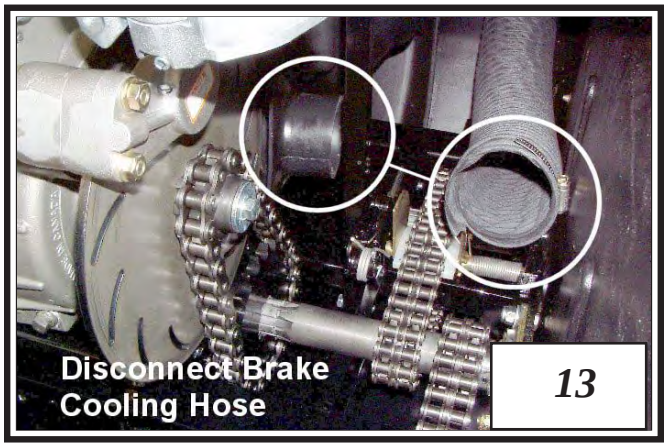
9. Remove the driven clutch from the transmission input shaft. ***Photo 11 & 12***

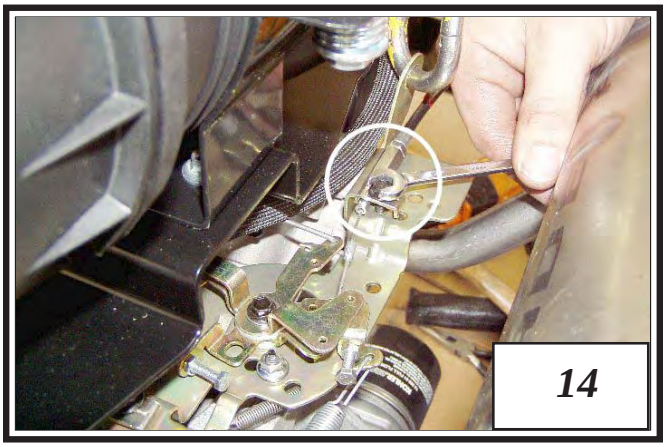




10. Disconnect the brake cooling hose at the brake duct. ***Photo 13***

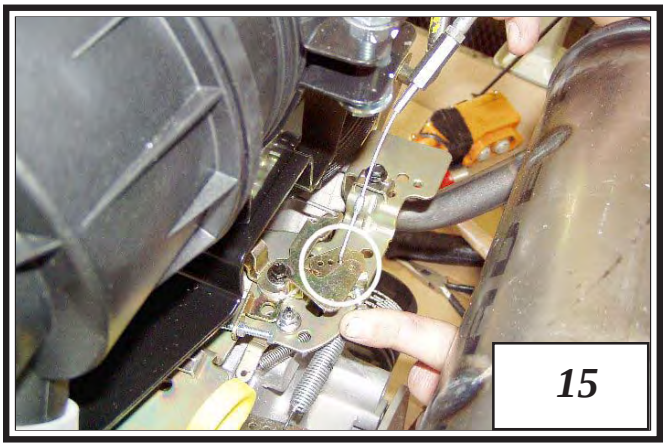
11 Disconnect the choke & throttle cables from the control panel on the Kohler engine. ***Photo 14 & 15*** **Make note of which hole the throttle cable is inserted.**





Removing The (4) Engine Mount Fasteners

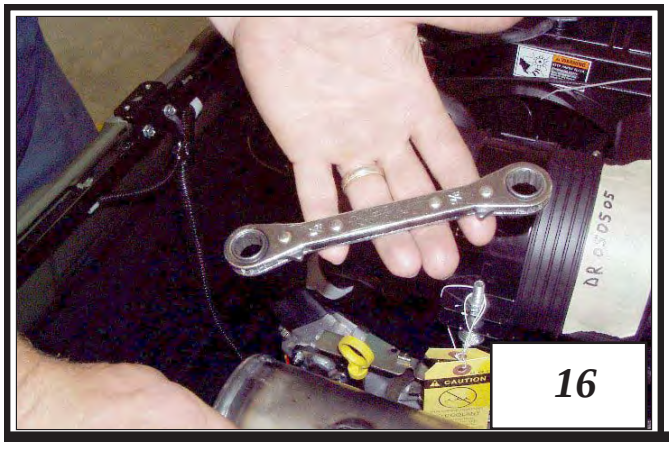
12. To effectively and efficiently remove the nylon locknuts that are securing the engine to the power pack frame studs, a flat ratcheting style wrench is the recommended tool of choice. ***Photo 16***

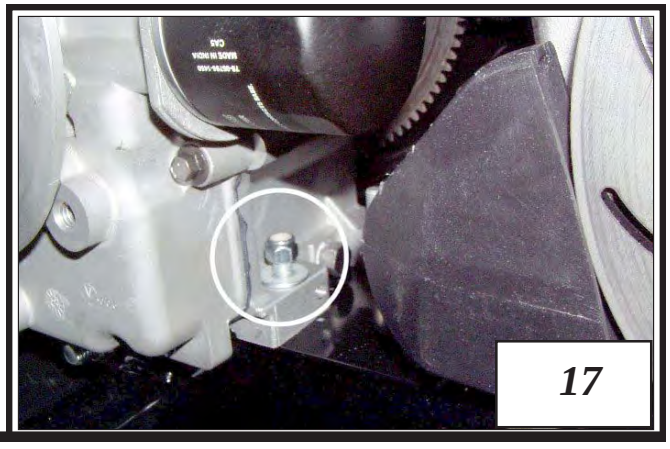


NOTE

This type of wrench is preferred for removing 3 of the 4 nylon locknut fasteners. The exception is the fastener located at the rear left corner of the engine block (as viewed by the operator in the drivers seat). This fastener requires the use of a regular opened end style wrench.

13. Remove each nylon locking nut and flat washer. ***Photo 17***





Lifting the Engine From the Vehicle

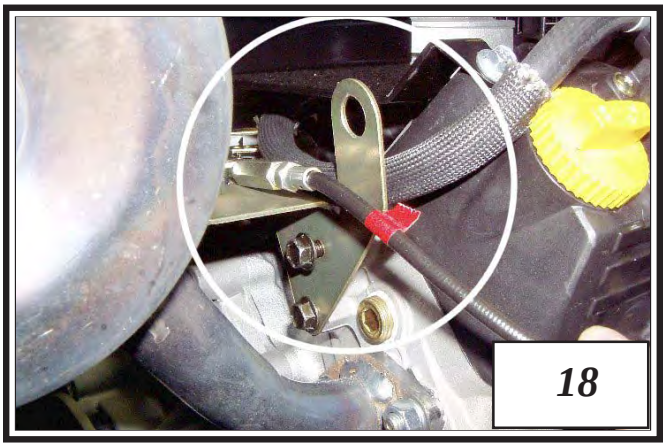
⚠ CAUTION

This procedure requires the use of an overhead hoist. Do NOT attempt to lift out by hand. Ensure all components attached to the engine have been detached. Lift out slowly and carefully. If you wish to remove the muffler from the engine before raising it out, you may do so as an optional procedure. You may find it easier to maneuver the engine up and out with the muffler removed, but it is not necessary.

⚠ WARNING

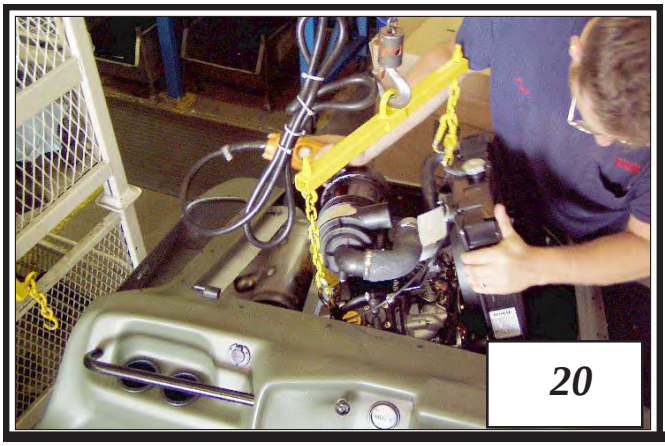
Ensure all hoist chains or belts are secure, and hooks are locked into place. Keep all fingers and hands clear of the area from which the engine is being lifted.

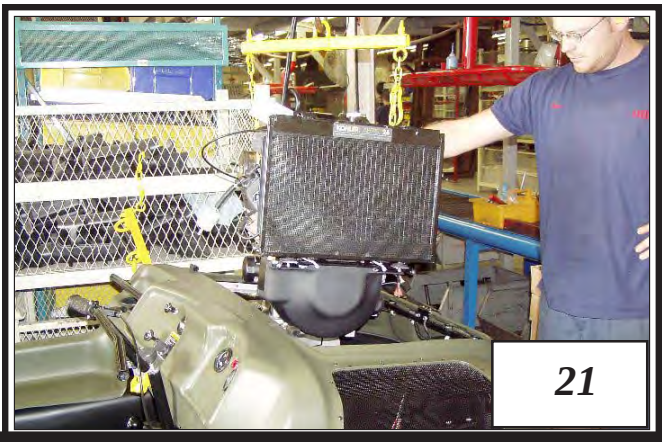
14. Attach the overhead hoist to the engine. There is a hook provided on the engine ***Photo 18***, (located near the yellow oil fill plug on earlier spec. engines and beside the rear cylinder head cover on later spec. engines),for connecting one side of the hoist chain. Connect the other side to the rad bracket. ***Photo 19***


18

19

15. Slowly and gently raise the engine through the hood area. Some manuevering is required as the engine does not necessarily come straight up and out. Avoid damage to any other components as well as the upper body. ***Photo 20 & 21***


20


21

16. Remove the engine to a clean workbench for further disassembly.

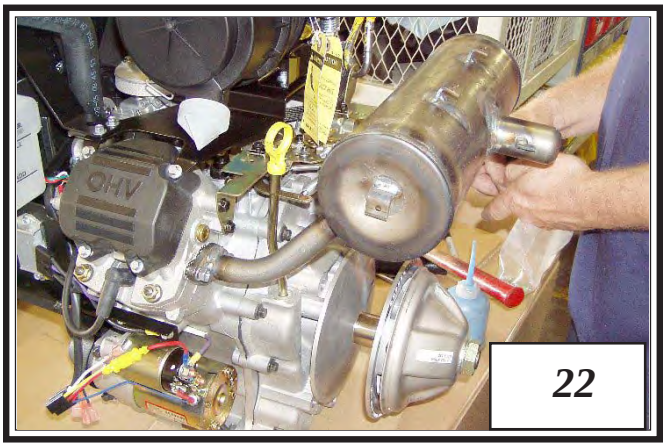
17. Remove the muffler if it was not previously removed. (EFI models will have an O2 sensor threaded into the muffler that will need to be removed as well. ***Photo 22***

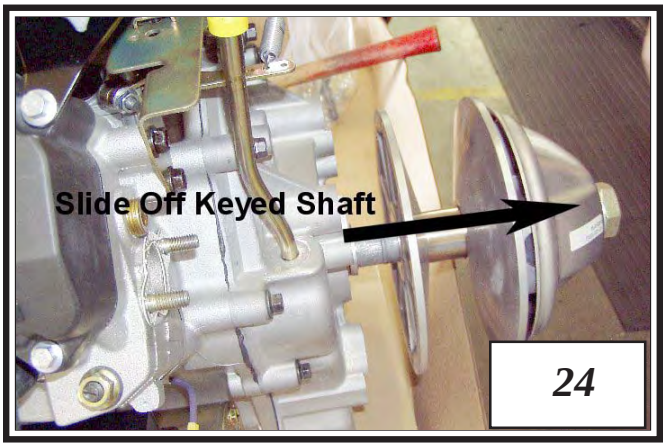
18. Remove the hex head fastener securing the driver clutch to the PTO and slide the clutch from the shaft. The PTO is a keyed shaft. ***Photo 23 & 24***

19. Remove the (5) shims that are installed to the PTO. ***Photo 25***

IMPORTANT

These shims MUST be reinstalled before the driver clutch.



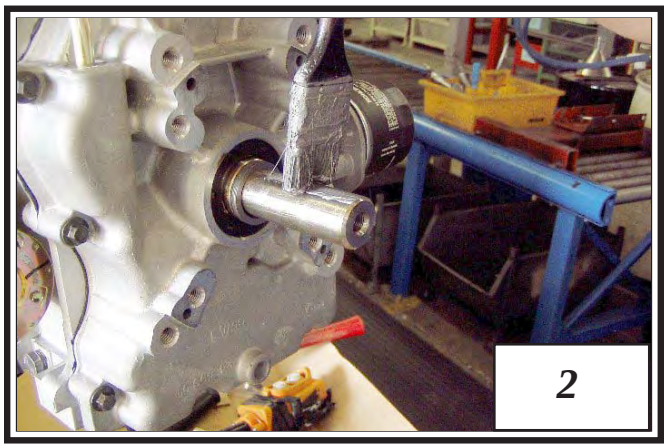


20. Remove all fluids.

Installing The Engine (Kohler Avenger Model)

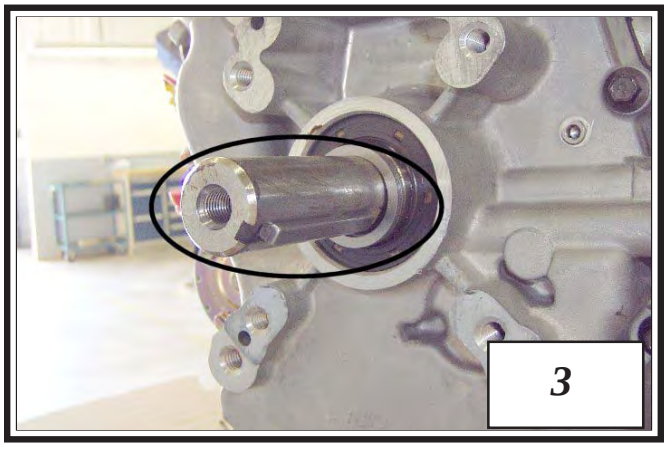
1. Install the (5) shims to the PTO of the engine. ***Photo 1***

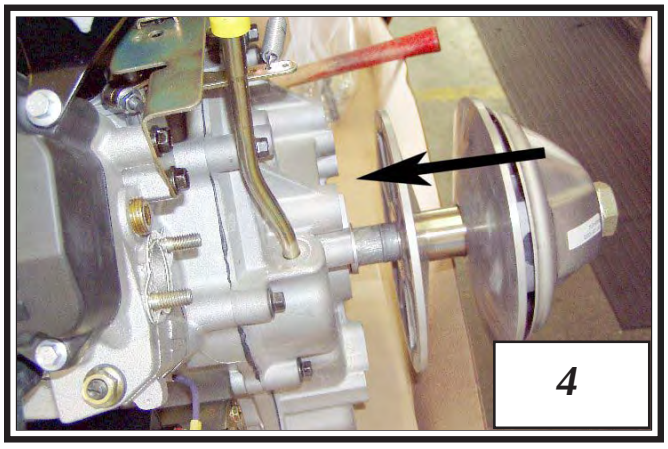
2. Apply anti-seize compound to the PTO. ***Photo 2***



3. Install the key to the keyway of the PTO. ***Photo 3***

4. Slide the driver clutch on and up to the shoulder of the PTO. ***Photo 4***





5. Secure the driver with the hex head fastener. Apply blue LOCTITE and Torque to specifications. ***Photo 5***

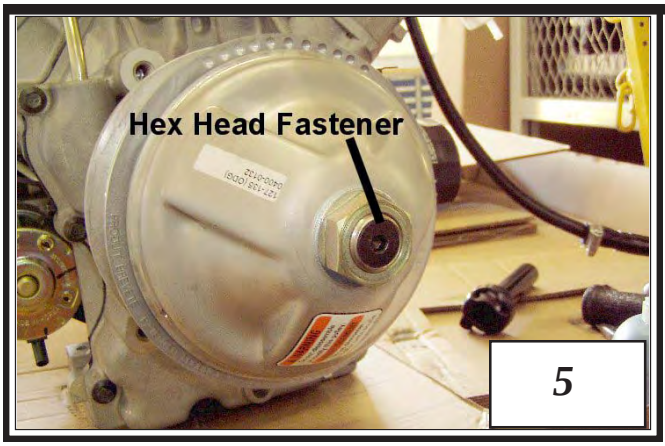
IMPORTANT

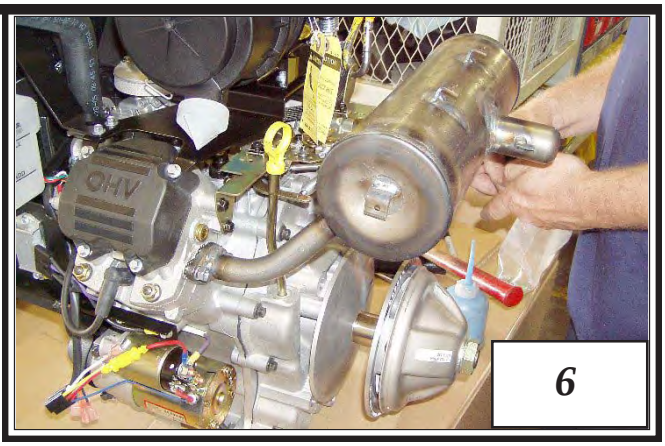
For part number and descriptions of all components and hardware, always refer to your illustrated Argo parts manual.

6. Install the muffler assembly to the engine manifold. ***Photo 6***

IMPORTANT

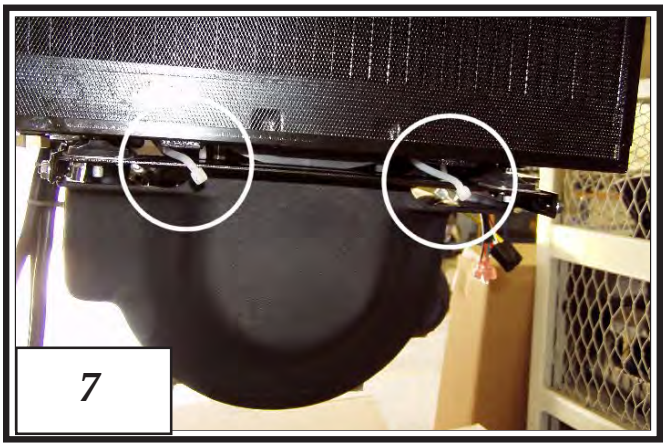
Always use new manifold gaskets

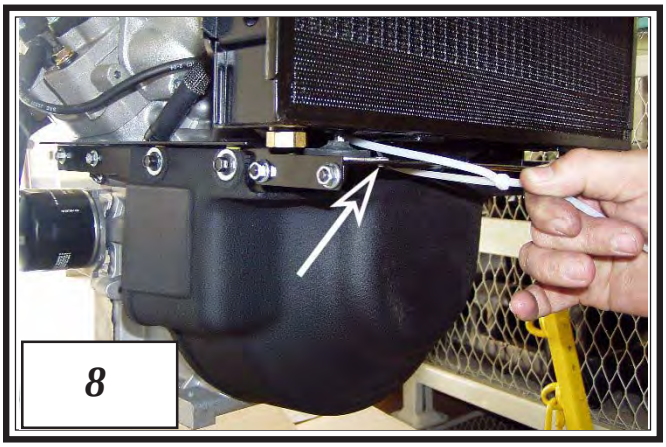




IMPORTANT

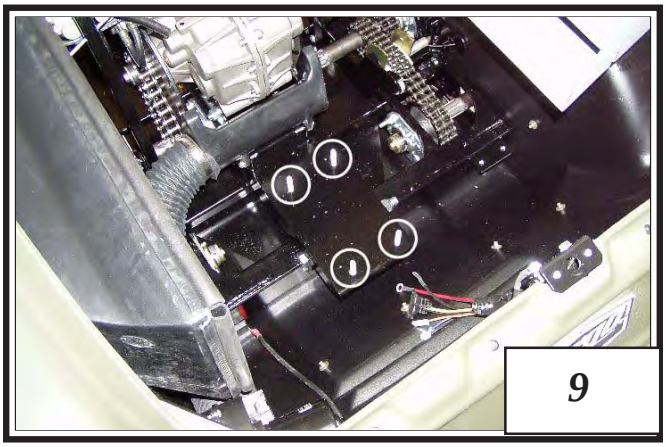
If you have removed the Kohler Aegis radiator assembly from the engine for any reason (repair, replacement etc.), ensure, when reinstalling it, that you tie-wrap the bottom of it securely to the lower bracket as in photo 7 & 8. This will prevent the lower radiator locating pins from dislodging from the rubber gromments under heavy vehicle application. Damage can occur to both fan and shroud if this is not done. Please note that later spec. engines have retaining clips installed to the locating pins and do not require the tie-wraps to secure the rad in place.



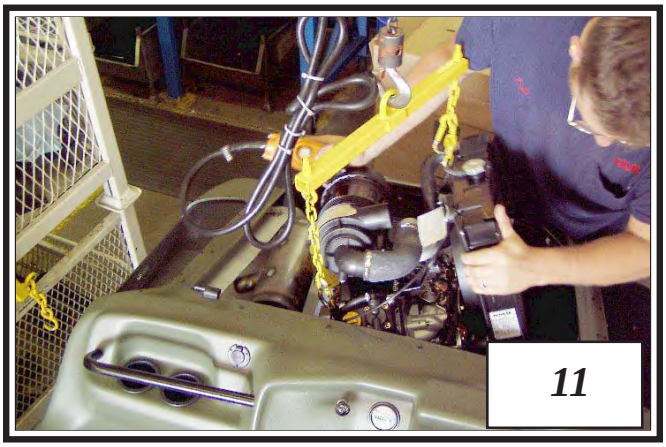


7. Attach the hoist hooks to the engine location as described in 14 of **Removing The Engine.**

8. Swing the engine assembly over the open hood area of the Avenger vehicle. Locate the (4) mounting studs on the power pack frame. ***Photo 9***



9. Slowly and gently lower the engine through the hood area. Some manuevering is required as the engine does not necessarily drop in straight on. Avoid damage to any vehicle components as well as the upper body. ***Photo 10 & 11***

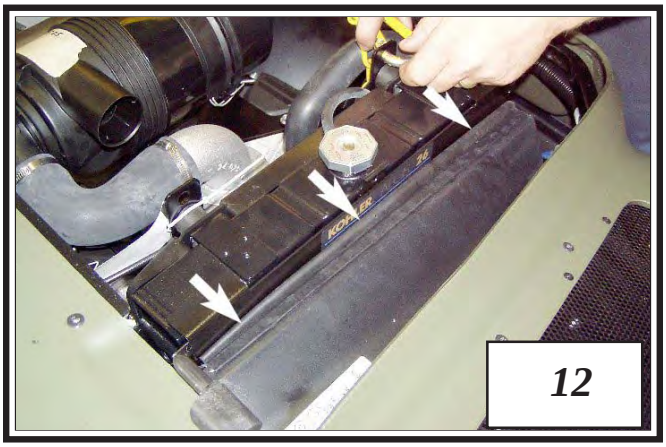


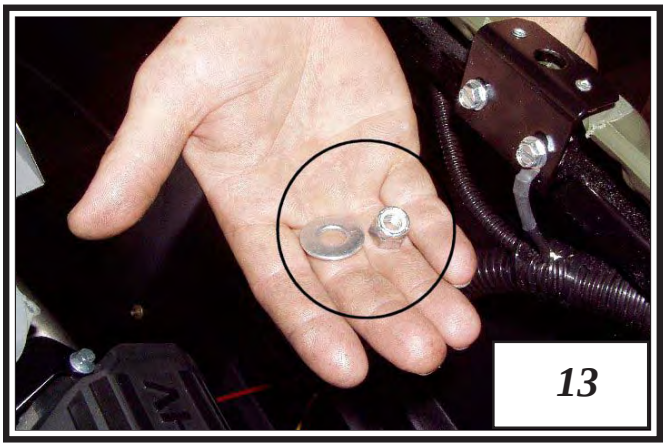
IMPORTANT

Align the mounting holes of the engine block with the powerpack frame studs. Once aligned properly, the engine should just drop into place. Do not force or hammer in any way. Damage may occur to the threads of the mounting studs.

IMPORTANT

Once the engine is seated into place, ensure that the rubber rad seal is properly sealing at the face of the radiator. ***Photo 12***

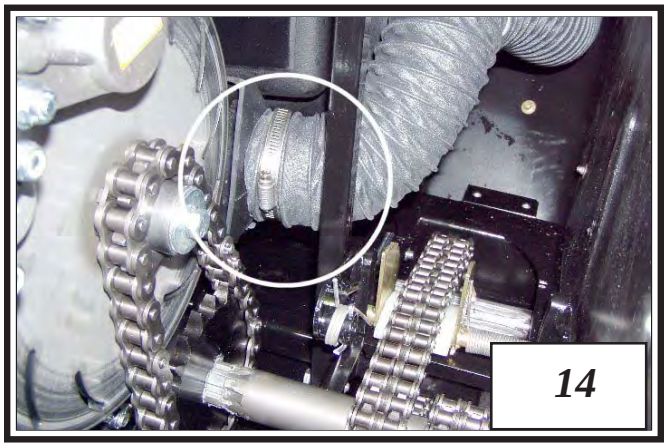




10. Locate the flat washer and nylon locknut used to secure the engine to the power pack frame studs. ***Photo 13*** **Refer to your illustrated parts manual.** Install all four fasteners and Torque to specifications. **Refer to step 12 of Removing The Engine, for preferred wrenches used to retighten the nylon locknuts.**

11. Reconnect the brake cooling hose at the brake duct. ***Photo 14***

12 Reconnect the choke & throttle cables to the control panel on the Kohler engine. ***Photo 15*** **Insert the throttle cable into the correct hole.** ***Photo 16***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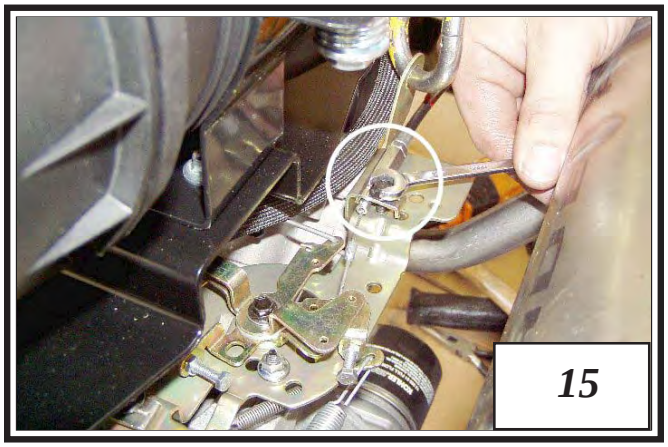
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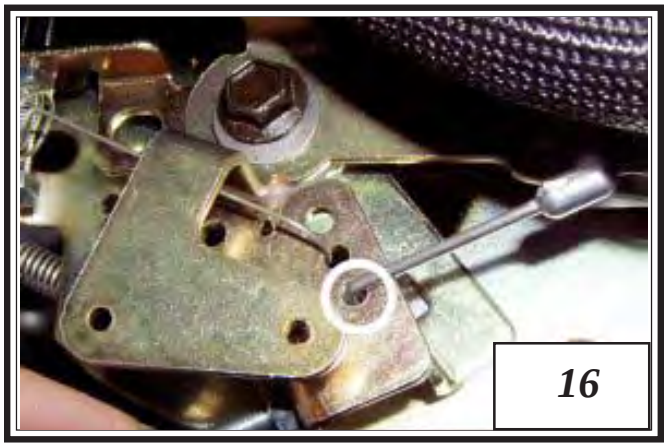
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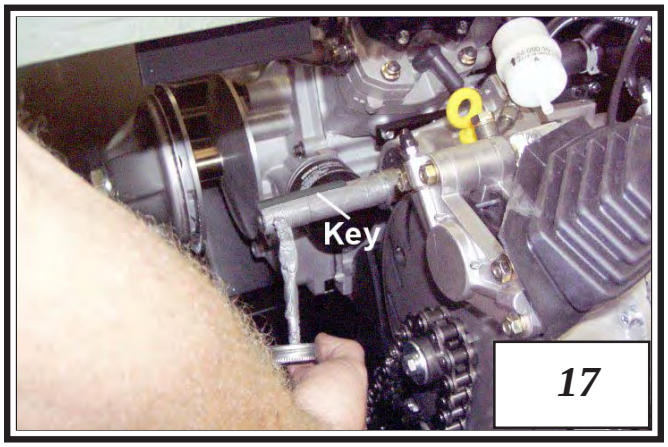

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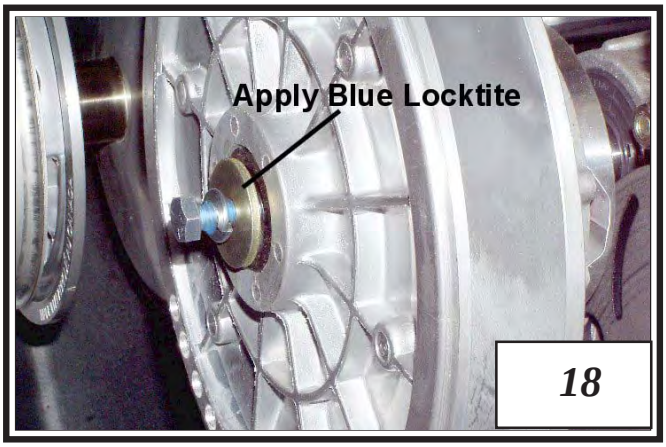
13. Assemble the key to the keyway of the transmission input shaft. Apply anti-seize compound to the length of the shaft. ***Photo 17***

14. Install the driven clutch. Apply blue LOCTITE to the threads of the fastener and Torque to specifications. ***Photo 18***

15. Reinstall the drive belt between engine and transmission.



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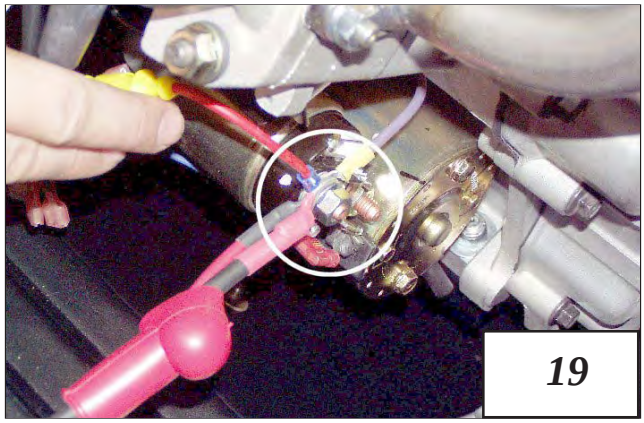
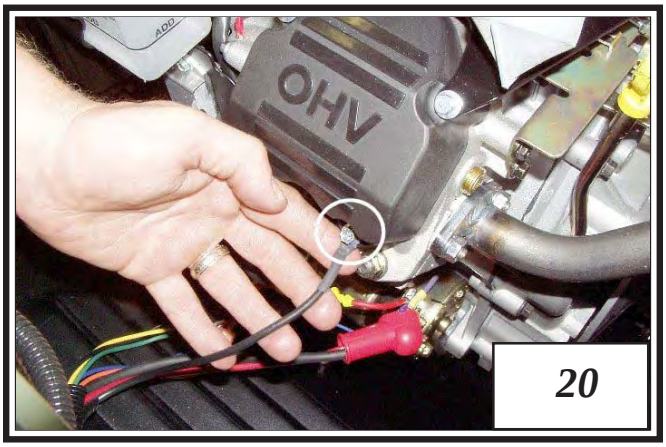
16. Locate the starter at the front of the engine compartment and reconnect both red and black power wires to the starter solenoid. ***Photo 19 These wires are enclosed within a red rubber boot.***

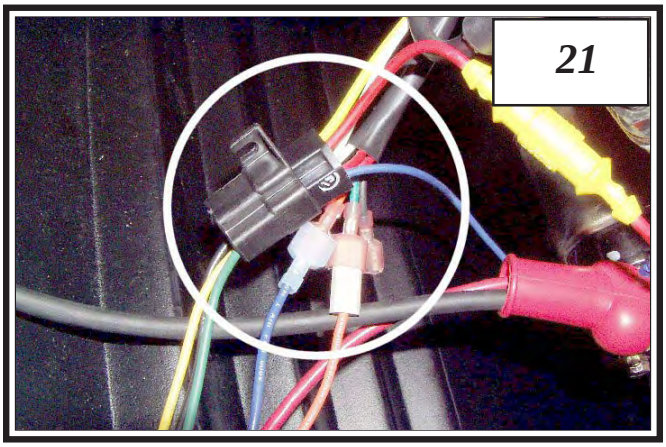
17. Reconnect the ground wire attached at the front of the engine to the valve cover fastener. ***Photo 20***

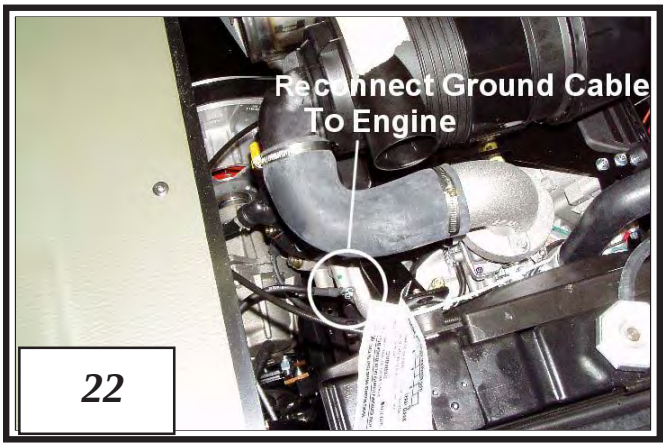




18. Locate the main wire harness plug-ins at the front of the engine compartment and reconnect the main black plug. Reconnect both blue and orange wires (oil pressure and coolant temperature sensors). ***Photo 21***

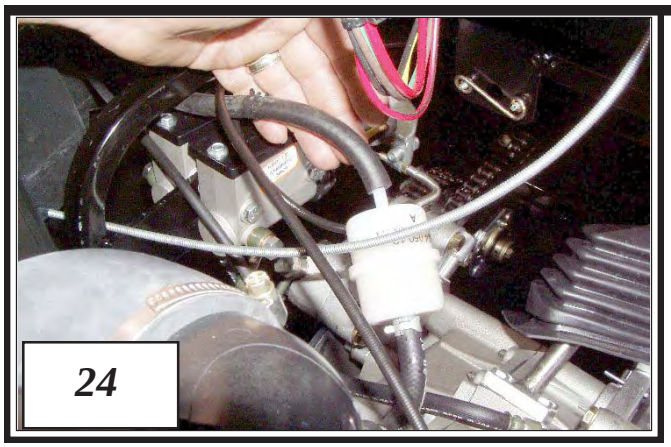
19. Reconnect the ground cable at the engine. ***Photo 22 & 23***

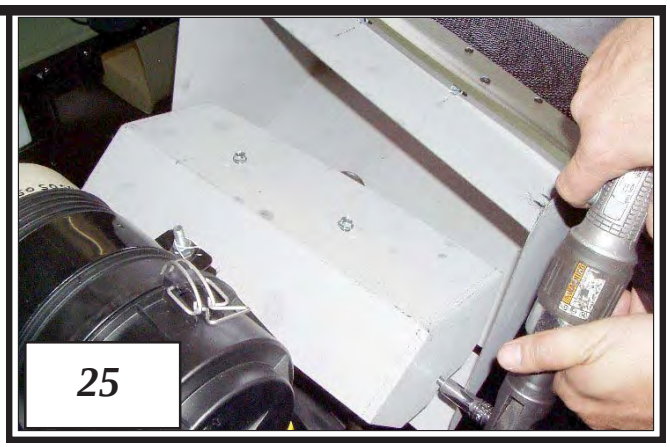




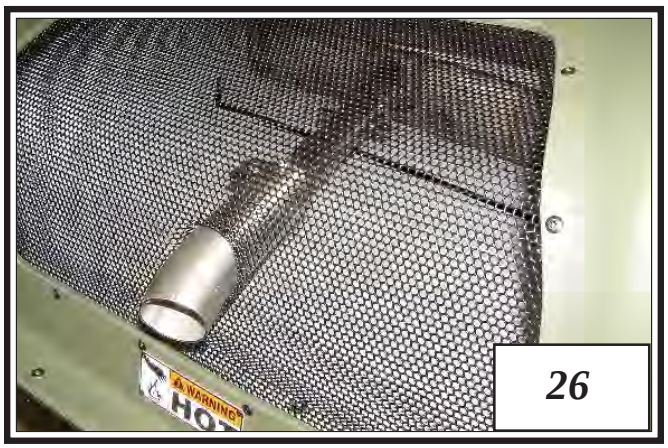
20. Reconnect the fuel line to the carburator. ***Photo 24***

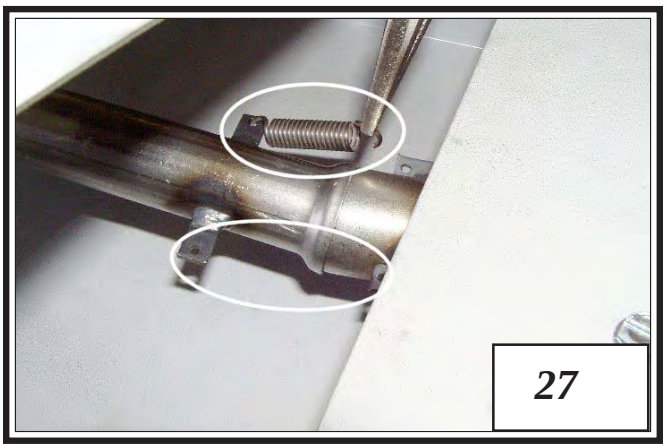
21. Reinstall the heat deflector shield over the muffler. ***Photo 25***





22. Locate and install the tailpipe assembly. Attach the connecting springs between tailpipe assembly and muffler. ***Photo26 & 27*** Feed the tailpipe assembly in through the hood area.





23. Replenish all fluid levels.