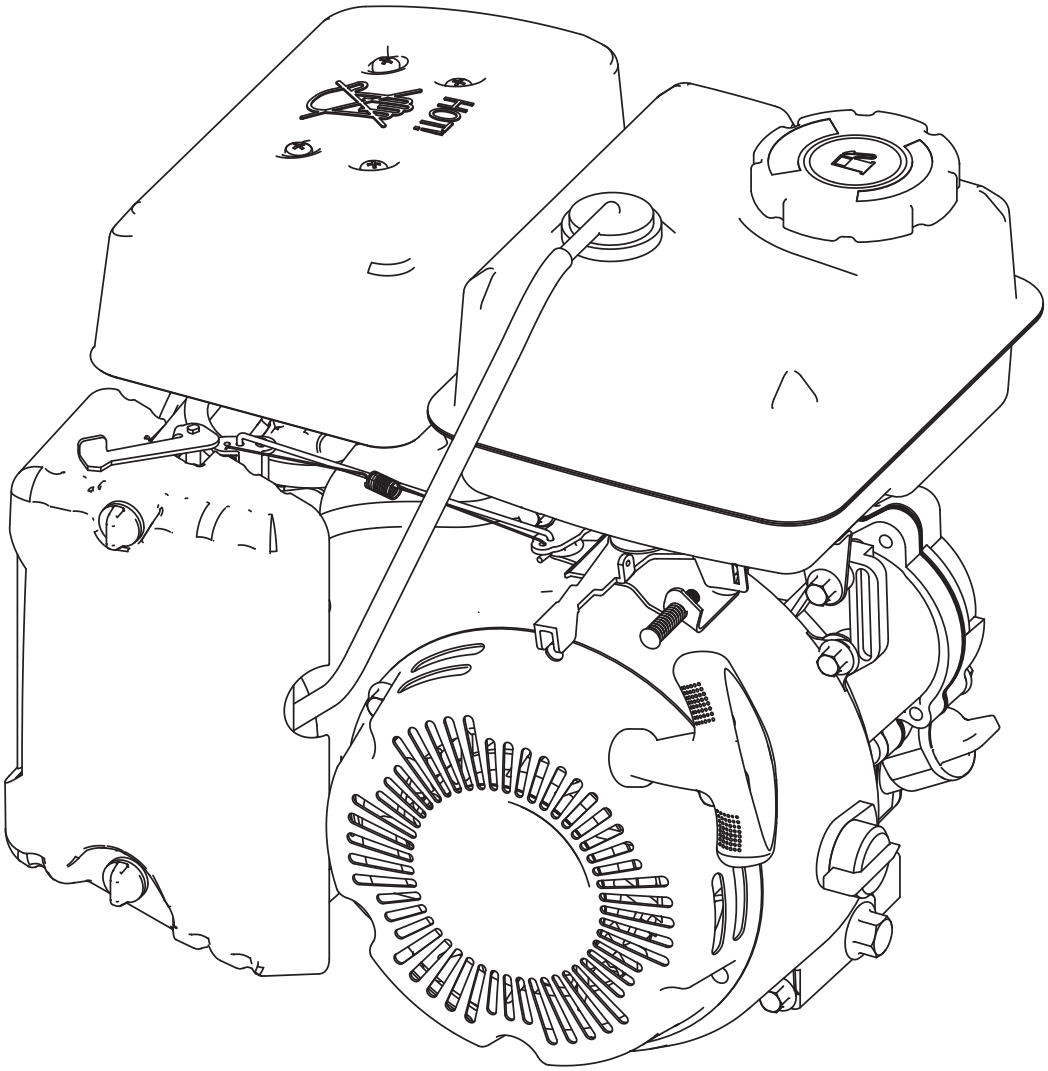
Operator's Manual

Original Operating Instructions

Viper® 99cc 4-Cycle Engine



Includes Model: 13276

Email for more information
info@ardisam.com

P/N: 13279
ECN: 10646
REV6: 11/15/14

INTRODUCTION

Congratulations on your investment in quality. Thank you for purchasing a Viper® Engine. We have worked to ensure that your engine meets the highest standards for usability and durability. With proper care, your engine will provide many years of service.

Please read this entire manual before installation and use. Viper® reserves the right to change, alter or improve the product and this document at any time without prior notice.

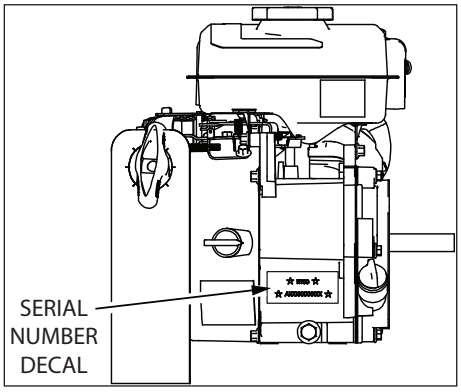
CONTENTS

FEDERAL EMISSION INFORMATION

Viper warrants to the retail purchaser, that this small, off-road engine was designed, built and equipped to conform at the time of initial sale to all applicable regulations of the U.S. Environmental Protection Agency (EPA) and those of the State of California (CARB).

REGISTRATION AND SERVICE

Record the product model number and serial number in the space provided for easy reference when ordering parts or requesting technical support. Excluding emissions-related warranty items, the warranty is valid only if the completed registration is received by Viper within 30 days of purchase. (SEE WARRANTY SECTION FOR MORE INFORMATION.) You can register your warranty online by visiting www.ardisam.com, or by mailing it to: Ardisam, Inc., 1160 8th Avenue, Cumberland, WI 54829. If you prefer phone, call our customer service department at (800) 345-6007 Mondays through Fridays from 8 a.m. to 5 p.m. CST.



OWNERSHIP RECORDS		
Owner's Name:		
Owner's Address:		
City:	State/Province:	Zip Code/Postal Code:
Model Number:	Serial Number:	
Date of Purchase:		
Notes:		

This manual may contain information for several models. Read and keep this manual for future reference. This manual contains important information on SAFETY, ASSEMBLY, OPERATION, AND MAINTENANCE. The owner must be certain that all the product information is included with the unit. This information includes the MANUAL, the REPLACEMENT PARTS and the WARRANTIES. This information must be included to make sure state laws and other laws are followed. This manual should remain with the engine even if it is resold.

WARNINGS AND SAFETY PRECAUTIONS

Owner's Responsibility

Accurate assembly and safe and effective use of the machine is the owner's responsibility.

- Read and follow all safety instructions.
- Carefully follow all assembly instructions.
- Maintain the machine according to directions and schedule included in this Viper® operator's manual.
- Ensure that anyone who uses the machine is familiar with all controls and safety precautions.

Special Messages

Your manual contains special messages to bring attention to potential safety concerns, machine damage as well as helpful operating and servicing information. Please read all the information carefully to avoid injury and machine damage.

NOTE: General information is given throughout the manual that may help the operator in the operation or service of the machine.

THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER YOUR PERSONAL SAFETY. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE THIS EQUIPMENT.

Before Operating Equipment:

Please read this section carefully. Read entire operating and maintenance instructions for this product. Failure to follow instructions could result in serious injury or death. Operate the machine according to the safety instructions outlined here and inserted throughout the text. Anyone who uses this machine must read the instructions and be familiar with the controls.

WARNING

WARNING INDICATES A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.

CAUTION

CAUTION INDICATES YOUR EQUIPMENT CAN BE DAMAGED IF THE SAFETY INSTRUCTIONS THAT FOLLOW THIS SIGNAL WORD ARE NOT OBEYED.

IMPORTANT

INDICATES HELPFUL INFORMATION FOR PROPER ASSEMBLY, OPERATION, OR MAINTENANCE OF YOUR EQUIPMENT.

WARNING

CALIFORNIA PROPOSITION 65 WARNING

ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM.

WARNING

YOU MUST READ, UNDERSTAND AND COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO SETUP AND OPERATE YOUR MACHINE.

FAILURE TO COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS CAN RESULT IN LOSS OF MACHINE CONTROL, SERIOUS PERSONAL INJURY TO YOU AND/OR BYSTANDERS, AND RISK OF EQUIPMENT AND PROPERTY DAMAGE. THE TRIANGLE IN THE TEXT SIGNIFIES IMPORTANT CAUTIONS OR WARNINGS WHICH MUST BE FOLLOWED.

⚠ WARNING

ENGINES GIVE OFF CARBON MONOXIDE, AN ODORLESS, COLORLESS, POISONOUS GAS. CARBON MONOXIDE MAY BE PRESENT EVEN IF YOU DO NOT SMELL OR SEE ANY ENGINE EXHAUST. BREATHING CARBON MONOXIDE CAN CAUSE NAUSEA, FAINTING OR DEATH, IN ADDITION TO DROWSINESS, DIZZINESS AND CONFUSION.

IF YOU EXPERIENCE ANY OF THESE SYMPTOMS, SEEK FRESH AIR AND MEDICAL ATTENTION IMMEDIATELY.

START AND RUN ENGINE OUTDOORS. DO NOT START OR RUN ENGINE IN ENCLOSED AREA, EVEN IF DOORS OR WINDOWS ARE OPEN.

HOT GASES ARE A NORMAL BY-PRODUCT OF A FUNCTIONING CATALYTIC CONVERTER. FOLLOW ALL SAFETY INSTRUCTIONS TO PREVENT BURNS AND FIRES.

DO NOT ALTER/MODIFY ENGINE:

NEVER ALTER OR MODIFY THE ENGINE FROM THE FACTORY. SERIOUS INJURY OR DEATH MAY OCCUR IF ENGINE IS MODIFIED OR ALTERED.

WHEN WORKING ON OR REPLACING PARTS FOR THE ENGINE OR PRODUCT, YOU MUST ALWAYS DISCONNECT SPARK PLUG WIRE FROM THE SPARK PLUG AND KEEP IT AWAY FROM THE SPARK PLUG.

ENGINE SAFETY PRECAUTIONS

Preventing Carbon Monoxide Poisoning

- Never try to ventilate engine exhaust indoors. Carbon monoxide can reach dangerous levels very quickly.
- Never run engine outdoors where exhaust fumes may be pulled into a building.
- Never run engine outdoors in a poorly ventilated area where the exhaust fumes may be trapped and not easily taken away. (Examples include: in a large hole or areas where hills surround your working area.)
- Never run engine in an enclosed or partially enclosed area. (Examples include: buildings that are enclosed on one or more sides, under tents, car ports or basements.)
- Always run the engine with the exhaust and muffler pointed in the direction away from the operator.
- Never point the exhaust muffler towards anyone. People should always be many feet away from the operation of the engine and its attachments.
- Do not change the engine governor settings or over-speed the engine.
- Stay away from rotating parts. Place protective covers over rotating parts.
- Do not use engine around dry brush, cloth rags, or other flammable materials.
- Always keep materials and debris clear of muffler guard and other hot engine parts.
- Never operate the engine without the muffler guard in place.
- Always make sure the exhaust pipe is free of foreign objects.
- The engine exhaust becomes very hot during operation. Keep engine at least three feet away from buildings and other equipment during operation.
- Wear appropriate clothing such as a long-sleeved shirt or jacket. Also wear long trousers or slacks. Do not wear shorts. Never wear sandals, sneakers, or open shoes, and never operate the machine with bare feet.
- Do not wear loose clothing or jewelry. They can get caught in moving parts. Always keep hands, feet, hair and loose clothing away from any moving parts on engine and machine.

Gasoline Fires and Handling Fuel Safely

Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.

- When storing extra fuel be sure that it is in an appropriate container and away from any fire hazards. Prevent fire and explosion caused by static electric discharge. Use only nonmetal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM).
- Always fill fuel tank outside in a well ventilated area. Never fill your fuel tank with fuel indoors. (Examples include: basement, garage, barn, shed, house, porch, etc.) Never fill tank near appliances with pilot lights, heaters, or other ignition sources. If the fuel has to be drained, this should be done outdoors and with the proper equipment. Do not pour fuel from fuel tank. The drained fuel should be stored in a container specifically designed for fuel storage or it should be disposed of carefully.
- Never remove the fuel cap or add fuel with the engine running. Stop engine and allow to cool before removing the fuel cap/and or refilling the engine.
- Do not smoke near or while handling engine fuel.
- Never drain fuel from engine in an enclosed area.
- During storage, tightly screw down fuel cap.
- Never pour fuel from engine fuel tank.
- Never siphon fuel by mouth to drain fuel tank.
- Always have an adult fill the fuel tank and never allow children to fill the engine.
- Never allow an adult or anyone under the influence of drugs or alcohol to fill engine.
- When storing gasoline or equipment with fuel in the tank, store away from furnaces, stoves, water heaters or other appliances that have a pilot light or other ignition source because they can ignite gasoline vapors.

Burns and Fires

- The muffler, muffler guard and other parts of the engine become extremely hot during the operation of the engine. These parts remain extremely hot after the engine has stopped.

Prevention of Burns and Fires

- Never remove the muffler guard from the engine.
- Never touch the muffler guard because it is extremely hot and will cause severe burns.
- Never touch parts of the engine that become hot after operation.
- Always keep materials and debris away from muffler guard and other hot parts of the engine to avoid fires.
- This engine is designed to operate using a catalytic converter which contributes to the engine's compliance with the EPA

SERVICE

- Always stop the engine whenever you leave the equipment, before cleaning, repairing or inspecting the unit. Engine should be turned off and cool, spark plug wire must be removed from spark plug before any repairs or adjustments are attempted. Never make adjustments or repairs with the engine (motor) running. Disconnect the spark plug wire, and keep the wire away from the plug to prevent accidental starting.
- Always wear eye protection when you make adjustments or repairs.
- Keep all nuts and bolts tight and keep equipment in good condition. Never tamper with safety devices. Check their proper operation regularly.
- When servicing or repairing the engine, do not tip the engine over or up unless specifically instructed to do so in this manual. Service and repair procedures can be done with the engine in an upright position. Some procedures will be easier if the engine is lifted on a raised platform or working surface.
- To reduce fire hazard, keep engine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow engine to cool before storing.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Clean and replace safety and instruction decals as necessary.
- To guard against engine over-heating, always have engine debris filter mounted and clean.
- Inspect engine before storage. When not in use, disconnect spark plug lead and store indoors in a dry place locked or otherwise inaccessible to children.
- Use only original equipment parts from Viper, including all nuts and bolts.

HAZARD SYMBOLS AND MEANINGS

A: Warning!

B: Avoid Injury From Rotating Tines.

C: Read Owner's Manual Before Operating Machine.

D: Remove Objects that Could Be Thrown By This Machine.

E: Dangerous Moving Parts.

F: Be Aware of Moving and Rotating Parts.

G: Wear Ear and Eye Protection At All Times.

H: Do Not Service or Adjust Moving Parts Unless Engine is Stopped and Spark Plug Wire is Disconnected.

I: Dress Appropriately And Wear Sturdy Footwear.

J: Toxic Fumes—Do Not Operate in Unventilated Areas.

K: Hot Surfaces.

L: Fire Hazards.

M. Do Not Use In Thunderstorms--For severe weather, stop operation of this machine and seek shelter.

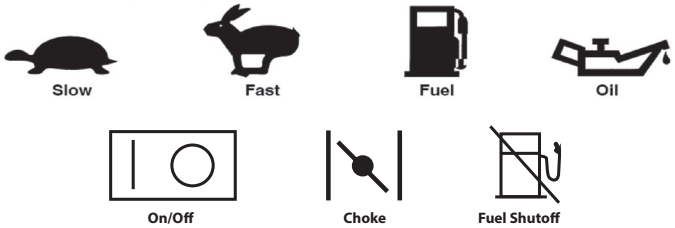
N. Team Lift--For your safety, always have at least two people when lifting this machine.

O. Do Not Till Above Underground Utility Lines And Pipes.

P. Do Not Operate When Children Or Others Are Around.

CONTROL AND OPERATING SYMBOLS

Pictured below are control and operating symbols on the unit or in this manual. Before you operate your unit, learn and understand the purpose for each symbol.



SAFETY DECALS

This engine has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing.

Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operated this equipment safely and effectively, we have placed several safety labels on the engine to remind you of this important information while you are operating the unit.

These safety labels are illustrated below, and are shown here to help familiarize you with the location and content of the safety messages you will see as you perform normal tilling operations. Please, review these decals now, and if you have any questions regarding their meaning or how to comply with these instructions, reread the complete safety instruction text in this manual. For additional questions contact Ardisam customer service.

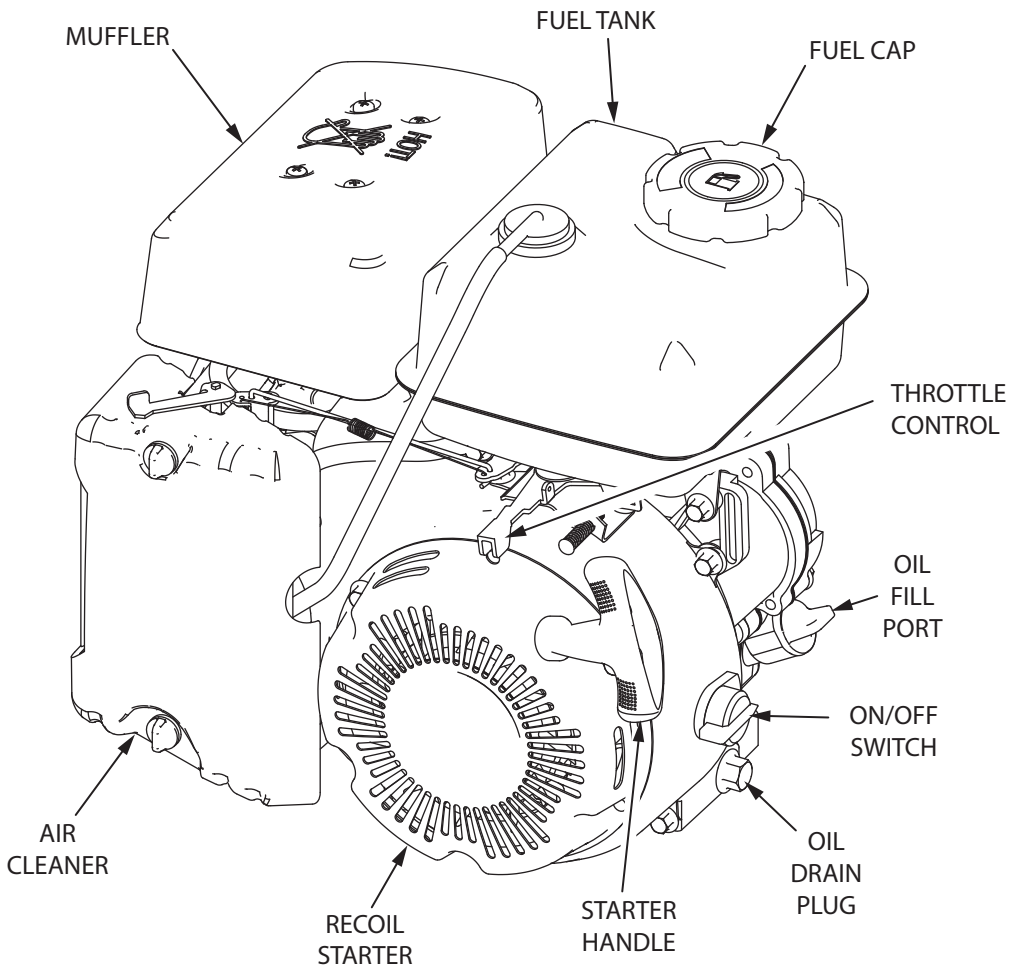
SPECIFICATIONS

Displacement/Cycle	99cc; 4-Cycle
Ignition Type	Electronic ignition
Cooling System	Forced air cooling
Idling Carburetor Adjust	2000 +/- 100 RPM
Valve Clearance	Cold engine-Intake: 0.10 - 0.15 mm; Exhaust: 0.15 - 0.20 mm
Maximum Torque	4.7-N.M./2500 RPM (3.32 ft-lb @ 2500 RPM)
Bore and Stroke	56 x 40 mm
Spark Plug Type	0.030" (0.7-0.8 mm gap) Torch/LG E5TC
Fuel Type	Minimum 87 octane gasoline with NO ethanol content. ***NOTE:*** *If using an ethanol blended fuel, a fuel stabilizer, mixed to manufacturer specifications, is recommended. DO NOT use E85 ethanol blend fuels.*
Fuel Tank Capacity	Approximately .53 gallons (2.0 L)
Drive Shaft Type	16mm, 60.1mm from end of shaft to mounting surface, 4.78 mm x 45 mm full key, drilled and tapped M6-6H, 25 mm min., full thread
Start Type	Recoil
Speed	3800 RPM
Oil Capacity and Type	0.37 quart (0.35 liters); 10W-30 (in freezing weather use 5W-30)
Weight	23.2 lb, dry (10.5 kg, dry)
Overall Dimensions	310 mm x 290 mm x 310 mm

FEATURES

ENGINE COMPONENTS Model 13276 99cc horizontal shaft

This is a 4-cycle air cooled engine. The 99cc engine utilizes a horizontal shaft and an oil slinger lubricated system.



WARNING

DO NOT ATTEMPT TO START ENGINE IN THE FOLLOWING WAYS:

- **DO NOT USE STARTING FLUID.**
- **DO NOT SPRAY FLAMMABLE LIQUIDS OR VAPORS INTO AIR CLEANER, CARBURETOR OR SPARK PLUG CHAMBER.**
- **DO NOT REMOVE SPARK PLUG AND PULL ON STARTER ROPE. FLAMMABLE FUEL CAN SPRAY OUT AND IGNITE FROM A SPARK FROM SPARK PLUG.**

DO NOT REFUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

FUEL IS HIGHLY FLAMMABLE AND MUST BE HANDLED WITH CARE. NEVER FILL THE TANK WHEN THE ENGINE IS HOT OR RUNNING. ALWAYS MOVE OUTDOORS TO FILL TANK.

ALWAYS PERFORM A PRE-OPERATION INSPECTION BEFORE EACH OPERATION AND CORRECT ANY PROBLEM.

IMPROPER MAINTENANCE OF THIS ENGINE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION, CAN CAUSE A MALFUNCTION.

SERIOUS INJURY OR DEATH CAN OCCUR IF THIS WARNING IS NOT COMPLIED WITH.

OPERATION

Pre-Operation Inspection

1. Check that engine is filled with the proper amount and type of oil. For the most appropriate type of oil to use, see chart below.
2. Check that the engine has the appropriate amount of fuel.
3. Examine underneath and around engine for signs of oil or fuel leaks.
4. Inspect fuel hoses and connections for tightness and fuel seepage.
5. Look for signs of engine damage.
6. Check that all guards and shields are in place, and all screws, nuts and bolts are tightened.
7. Eliminate excessive debris around muffler and recoil starter.
8. Be sure air filter and cylinder fins are clean and free of debris.
9. Check the equipment powered by this engine. Review the operator's manual provide with the equipment powered by this engine for any safety and warning precautions and/or procedures that should be followed before starting this engine.

Checking And Filling The Fuel Tank

Be sure the engine is located on a level surface before checking or refilling fuel. Use unleaded regular, unleaded premium automotive fuels only. Low/no ethanol blends recommended. Fuel may contain up to 10% ethanol. **DO NOT mix oil with fuel.**

1. Make sure engine is cool and not running while filling.
2. Remove fuel cap.
3. Fill tank to fuel level limit. **SEE FIGURE 1**

Note: Do not overfill.

3. Replace cap and remove any spilled fuel before operating.

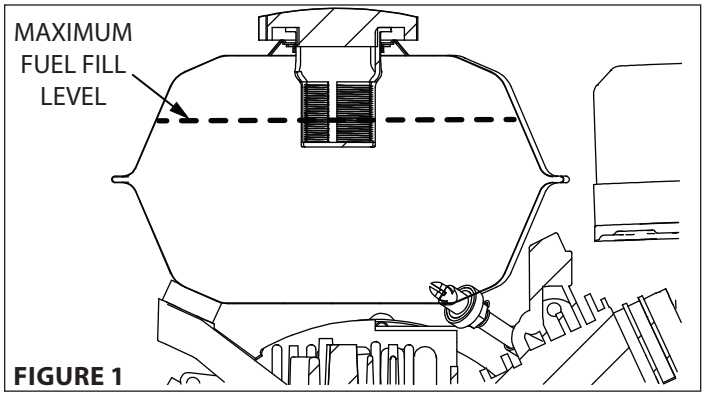


FIGURE 1

WARNING

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

ENGINE OIL IS HAZARDOUS TO YOUR HEALTH. DISPOSE OF OIL APPROPRIATELY. USE A SAFE DISPOSAL/RECYCLING CENTER.

- **ALWAYS PERFORM A PRE-OPERATION INSPECTION BEFORE EACH OPERATION AND CORRECT ANY PROBLEM.**
- **IMPROPER MAINTENANCE OF THIS ENGINE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION, CAN CAUSE A MALFUNCTION.**
- **SERIOUS INJURY OR DEATH CAN OCCUR IF THIS WARNING IS NOT COMPLIED WITH.**

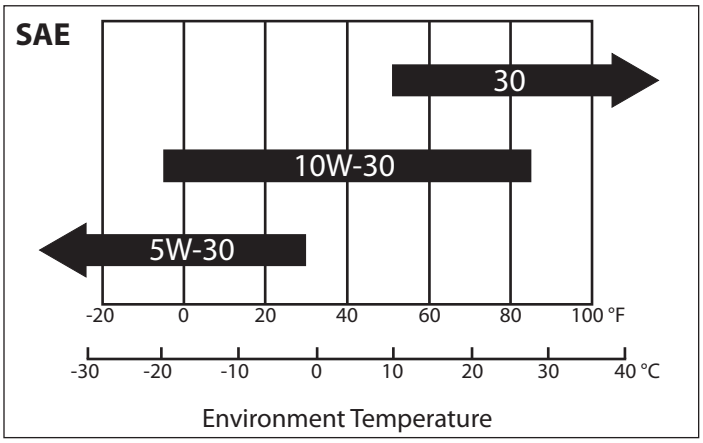
Checking and Adding Oil

Be sure the engine is located on a level surface before checking or refilling oil.

1. Clean around oil fill area and drain plug. **SEE FIGURE 2**
2. Unscrew dipstick and wipe clean with cloth. **SEE FIGURE 2**
3. Reinsert and tighten dipstick.
4. Unscrew and check dipstick. If no oil shows on the dipstick, refill to the top thread of the oil fill oil.
5. Change oil if contaminated.

NOTE: Viper engine oil may be put in through the oil dipstick hole or through the oil fill plug opening. If an oil plug is present, loosen screw and fill oil until oil level is even with top thread in plug hole.

Choosing Oil Type



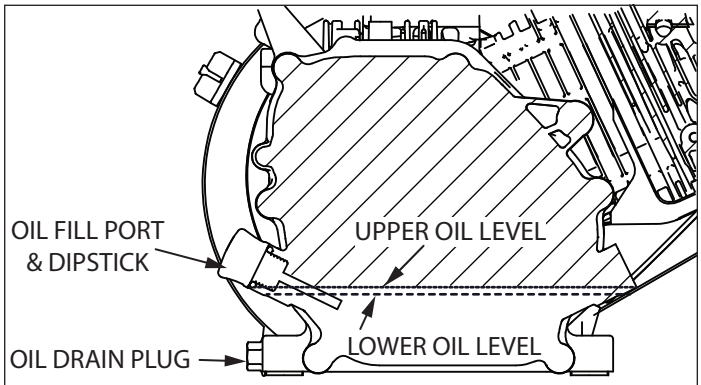


FIGURE 2

⚠ WARNING

CARBON MONOXIDE GAS IS TOXIC. MOVE THE ENGINE TO A WELL-VENTILATED AREA OUTDOORS, TO PREVENT CARBON MONOXIDE POISONING. INHALATION CAN CAUSE UNCONSCIOUSNESS AND DEATH.

NEVER LEAVE ENGINE RUNNING WHILE UNATTENDED

MOVE ENGINE TO A WELL-VENTILATED AREA, ALWAYS OUTDOORS, TO PREVENT CARBON MONOXIDE POISONING.

MOVE TO AN AREA AWAY FROM FLAMES OR SPARKS, TO AVOID IGNITION OF VAPORS IF PRESENT.

STARTING AND STOPPING THE ENGINE

Note: Operating engine on a steep angle will cause the engine to lose lubrication and seize.

Review "safety and warning precautions" and "pre-operation inspection" sections before starting engine.

Engine Start

1. Remove all debris from air cleaner holes and cooling fins to ensure proper air flow.
2. Move throttle lever 1/2 way between the **FULL** and **LOW** THROTTLE positions. **SEE FIGURE 3**.
3. Move the choke lever as follows:
   - If the engine is cold or the ambient temperature is low, move choke lever to the **FULL CHOKE** position. **SEE FIGURE 4**
   - If the engine is warm or the ambient temperature is high, move choke lever to the **HALF CHOKE** position or **RUN** position. **SEE FIGURES 5 AND 6**

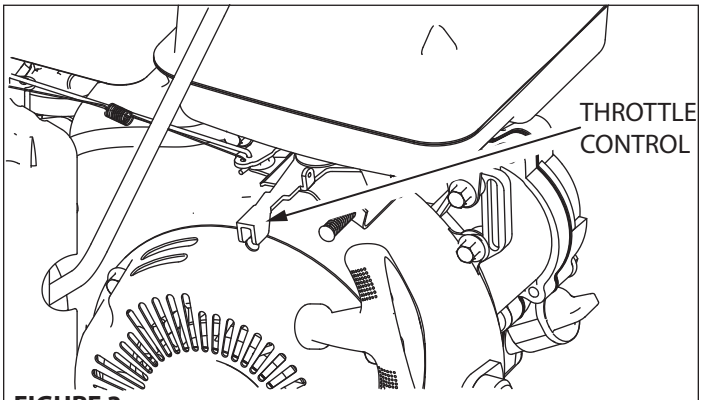


FIGURE 3

⚠ CAUTION

DO NOT STOP ENGINE BY MOVING CHOKE CONTROL TO CHOKE. BACKFIRE, ENGINE DAMAGE, OR FIRE MAY OCCUR.

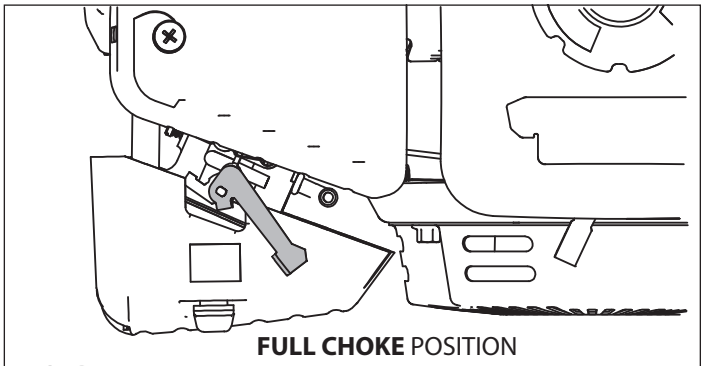

FULL CHOKE POSITION

FIGURE 4

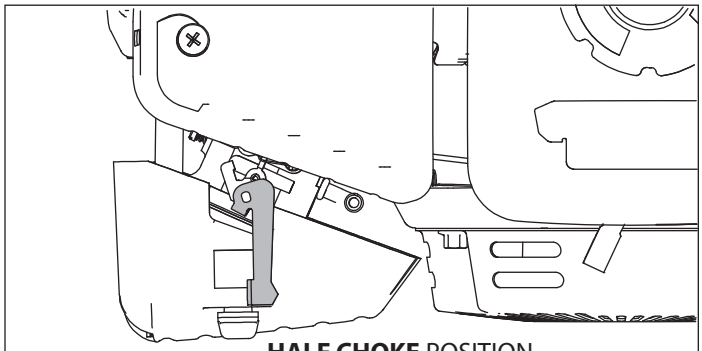

HALF CHOKE POSITION

FIGURE 5

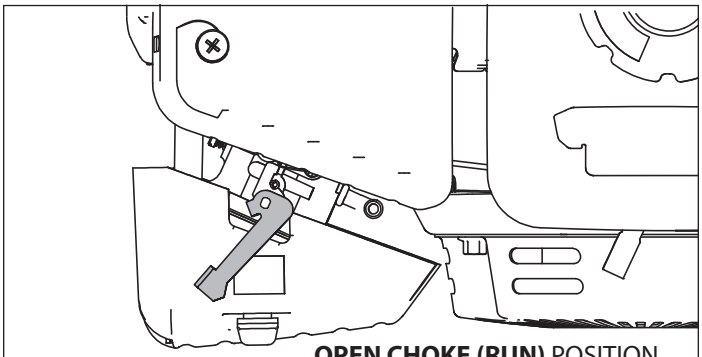

OPEN CHOKE (RUN) POSITION

FIGURE 6

4. Turn the On/Off switch to the ON position. **SEE FIGURE 7**
5. Grasp starter handle and pull out slowly, until resistance is felt. Without letting it retract, pull rope with a rapid stroke. **DO NOT** pull out the rope all of the way. Let it return to its original position very slowly. Repeat this step until engine starts.
6. After engine begins operating, move choke lever to **HALF CHOKE**. **SEE FIGURE 5.**
7. Run engine for 30 to 45 seconds at "Half Choke" position until engine warms up.
8. After starting the engine, slowly move the choke lever to the **RUN** position as the engine warms up. Move throttle to desired speed. **SEE FIGURE 3 & 6**

To Stop the Engine:

1. Set the throttle lever to the low speed position and allow the engine to run at low speeds for 1-2 minutes before stopping.
2. On manual-start models, turn the On/Off switch to the **OFF** position. **SEE FIGURE 8**
3. Pull the starter handle slowly and return the handle to its original position when resistance is felt. This operation will prevent outside moisture from entering the combustion chamber.

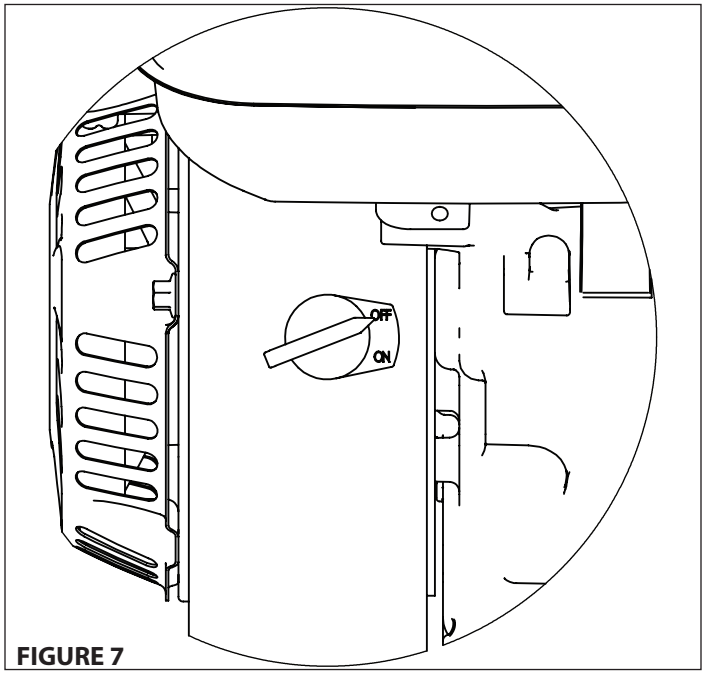


FIGURE 7

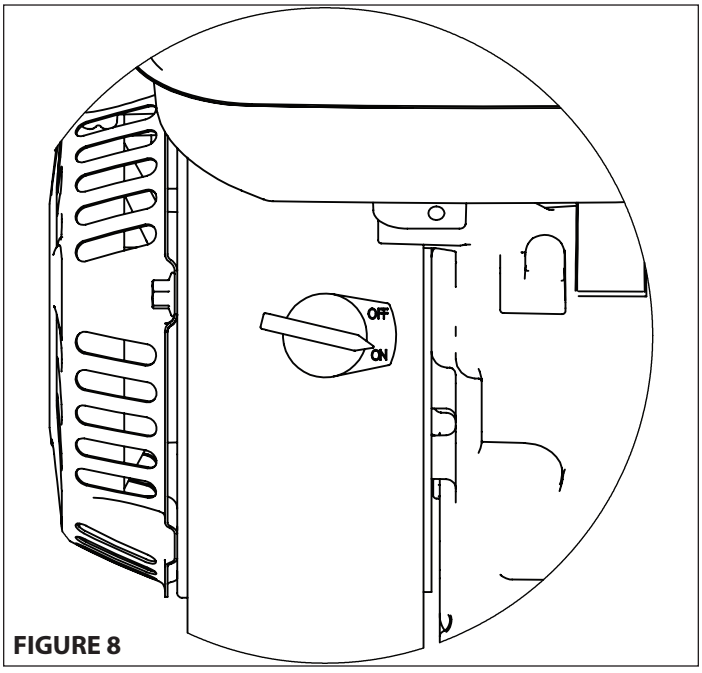


FIGURE 8

MAINTENANCE AND STORAGE

Please read the maintenance schedule, and observe these recommended care operating intervals to extend the life of your engine.

Good maintenance is essential for safe, economical, and trouble-free operation. It will also help reduce air pollution. To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a technician or other qualified mechanic.

Maintenance, replacement or repair of the emissions control devices and systems may be performed by any non-road engine repair establishment or individuals. However, items must be serviced by an authorized dealer to obtain "no charge" emissions control service.

The maintenance schedule applies to normal operating conditions. If you operate your engine under unusual conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

⚠ WARNING

IMPROPER MAINTENANCE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION CAN CAUSE A MALFUNCTION. ALWAYS FOLLOW THE INSPECTION AND MAINTENANCE RECOMMENDATIONS AND SCHEDULES IN THIS OPERATOR'S MANUAL.

CHECK ENGINE REGULARLY FOR LOOSE NUTS AND BOLTS. KEEP THESE ITEMS TIGHTENED.

TEMPERATURE OF MUFFLER AND NEARBY AREAS MAY EXCEED 150° F (65° C). AVOID THESE AREAS.

PREVENT ACCIDENTAL STARTING:

- **ENGINE MUST BE TURNED OFF AND COOL.**
- **SPARK PLUG WIRE MUST BE REMOVED FROM SPARK PLUG BEFORE CHECKING AND ADJUSTING ENGINE OR EQUIPMENT.**

FAILURE TO FOLLOW THESE WARNINGS CAN RESULT IN SERIOUS INJURY OR DEATH.

MAINTENANCE SCHEDULE

MAINTENANCE ITEM		Every time of use	First month or 20 hours	Each season or 50 hours	Every 6 months or 100 hours	Each year or 300 hours
Clean Engine and Check Bolts and Nuts		X				
Engine Oil	Check	X				
(See Lubrication section)	Change *		X	X		
Air Filter	Check	X				
(See Air Filter section)	Clean **			X		
	Replace				X	
Spark Plug (Gap 0.030")	Check-Adjust			X		
(See Spark Plug section)	Replace				X	
Fuel Filter	Clean ***				X	
(See Fuel Filter section)	Replace					
Valve Clearance	Check-Adjust ***					X
Cylinder Head	Clean ***					X
Fuel Tank	Replace ***					(Every 3 years)

* Perform initial oil change after first 20 hours of operation, then every 50 hours or each season. Oil must be disposed of safely and responsibly. Do not pour into sewage drains, onto a garden/yard or into a water source. Your local zoning or environmental regulations will give you more detailed instructions on proper disposal techniques.

** Service more frequently under dusty conditions

*** These items should only be performed by a mechanically proficient person or by the servicing dealer

WARNING

ENGINE OIL IS HAZARDOUS TO YOUR HEALTH. DISPOSE OF OIL APPROPRIATELY. USE A SAFE DISPOSAL/RECYCLING CENTER.

CAUTION

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

RUNNING ENGINE WITH A LOW OIL LEVEL WILL CAUSE DAMAGE TO YOUR ENGINE. THIS TYPE OF DAMAGE IS NOT COVERED UNDER WARRANTY.

ENGINE MAINTENANCE

For daily maintenance checks, review "pre-operation inspection" section.

LUBRICATION

Choose 4-cycle engine oil that meets or surpasses the latest API service classification SJ or equivalent as labeled on the oil container. Synthetic oils may be substituted for petroleum-based oils in extreme temperatures. For temperatures higher than 32 ºF, use SAE 30 or SAE 10W-30 motor oil. Use SAE 5W-30 or SAE 10W if temperatures are below 32 ºF. **DO NOT USE SAE 10W-40 MOTOR OIL.**

Oil Maintenance

After the first 20 hours, or after the first month of operating a new *Viper*® Engine the oil should be replaced, and every 50 hours of operating time thereafter. The oil should be changed every 25 hours if used under severe conditions, such as in high temperatures or under heavy loads, otherwise changed weekly. Check oil periodically; do not overfill.

Changing Oil

Be sure the engine is not operating and is located on a level surface before checking or refilling oil. Engine should be warm for easy removal of oil.

1. Detach spark plug wire and move away from spark plug. If the engine uses a battery, disconnect at negative terminal. **SEE FIGURE 9**
2. Remove oil drain plug and empty oil into suitable oil container. Dispose of oil properly. **SEE FIGURE 10**
3. Reinstall drain plug. Remove dipstick (if applicable) or oil fill cap. **SEE FIGURE 10**
4. Fill with appropriate oil to "FULL" or top line of dipstick; otherwise to top thread of oil fill hole. **SEE FIGURE 10**
5. Reinsert dipstick or oil fill cap and tighten.

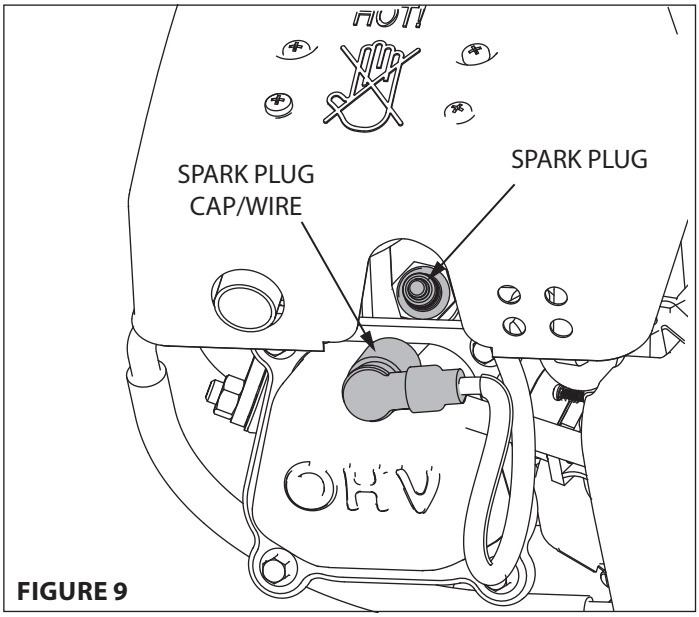


FIGURE 9

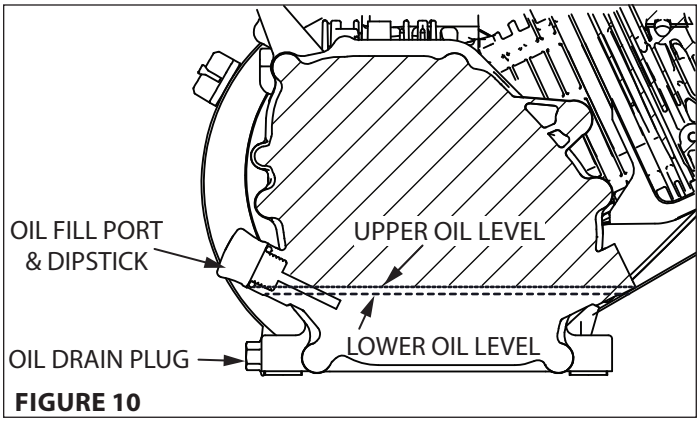


FIGURE 10

⚠ CAUTION

NEVER RUN ENGINE WITHOUT AIR FILTER PROPERLY INSTALLED. ADDED WEAR AND ENGINE FAILURE MAY OCCUR IF AIR FILTER IS NOT INSTALLED ON ENGINE.

AIR FILTER

Refer to maintenance schedule for suggestions on when to service your air filter. **Clean filter daily in extremely dusty conditions.**

Remove/Install Air Filter as follows: SEE FIGURE 11

1. Remove air cleaner cover.
2. Remove the air filter.
3. Replace with clean or new air filter.
4. Replace air filter cover.

Washing Air Filter as follows:

1. Wash in warm water with mild soap until dirt and debris are removed. Press filter when washing, do not twist.
2. Rinse in warm water until soap and dirt are removed.
3. Dry filter by wrapping in a clean cloth and pressing filter until it is dry.
4. Oil filter thoroughly with common household lubricating oil.
5. Attach the filter and air cleaner cover to the engine.

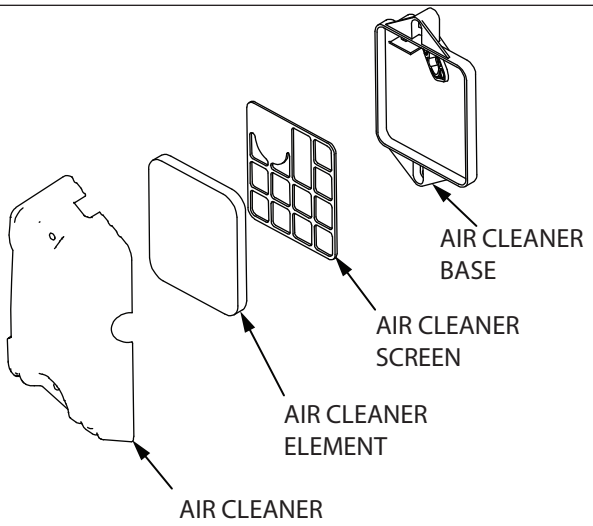


FIGURE 11

SPARK PLUG

The recommended spark plug is a LG E5TC. The spark plug is located directly under the muffler. **SEE FIGURE 12**

Checking and Changing Spark Plug

1. Check spark plug every 50 operating hours.

   NOTE: To make the spark plug more accessible, the muffler may be removed.

2. Disconnect the spark plug cap, and clean any debris from around the spark plug area.
3. Remove spark plug and replace if any of the following occur; pitted electrodes, burned electrodes, cracked porcelain, or deposits around electrodes.
4. After analysis, seat spark plug and tighten with spark plug wrench to compress the sealing washer. **SEE FIGURE 12**

- Reinstall original spark plug, tighten additional 1/2 turn.
- Installing new spark plug, adjust spark plug gap to 0.030" (0.7-0.8 mm) and tighten additional 1/8 – 1/4 turn.

NOTE: Loose spark plug may overheat and damage engine. Over tightened spark plug may damage threads in the cylinder head. **Spark Plug Maintenance**

Spark plug should be removed, cleaned and gap adjusted after approximately fifty hours of operating time.

NOTE: A sand blaster should not be used to clean spark plugs. Microscopic particles remaining in the plug may score the engine cylinder during operation. Use solvent and a wire brush to clean the plug and compressed air to blow out completely.

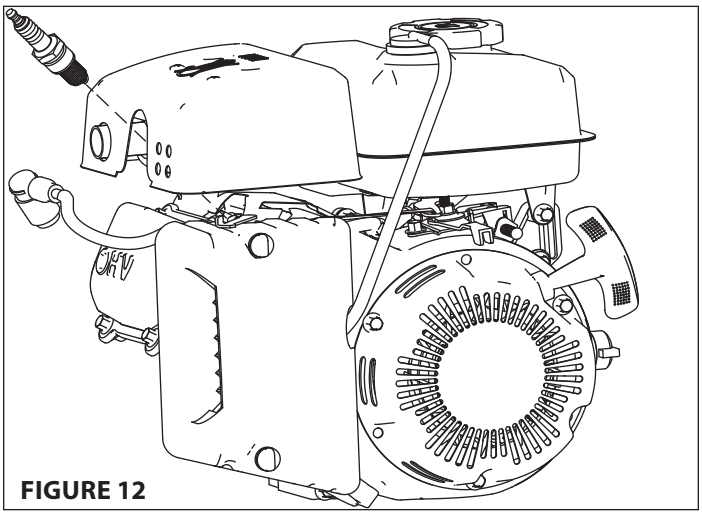


FIGURE 12

⚠ WARNING

FUEL IS HIGHLY FLAMMABLE AND MUST BE HANDLED WITH CARE. NEVER FILL OR DRAIN THE FUEL TANK WHEN THE ENGINE IS HOT OR RUNNING. ALWAYS MOVE OUTDOORS TO FILL OR DRAIN FUEL FROM THE TANK. SERIOUS INJURY OR DEATH CAN OCCUR.

DO NOT REMOVE FUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

FUEL IS TOXIC. DO NOT SIPHON FUEL BY MOUTH.

DO NOT STORE ENGINE INSIDE A BUILDING WITH FUEL IN THE TANK. POTENTIAL SPARKS MAY BE PRESENT CAUSING IGNITION OF FUEL AND FUEL VAPORS.

FAILURE TO FOLLOWS SAFETY INSTRUCTIONS CAN CAUSE SERIOUS INJURY OR DEATH.

CARBURETOR

- Never tamper with factory setting of the carburetor.
- Contact your service provider or *Viper®* if adjustment is needed.

FUEL FILTER

Clean Or Replace Fuel Filter as follows:

1. Disconnect spark plug wire from spark plug. Remove spark plug and protect spark plug hole from debris. **SEE FIGURE 12**
2. Drain fuel from tank before attempting to clean/replace filter.
3. Remove two nuts holding muffler to the engine and remove muffler.
4. Remove single tank bolt from fuel tank assembly.
5. Remove two nuts from underside of tank.
6. Gently lift tank off of the engine and disconnect the hose clamp. **SEE FIGURES 13 and 14**
7. Remove fuel tank filter by using proper size socket to turn filter counter clockwise. **SEE FIGURE 15**
8. Filter may be washed with kerosene or similar solvent.
9. If filter is extremely dirty or torn replace with new filter.
10. Reassemble and fill with clean fresh gasoline. Check for leaks prior to starting engine.

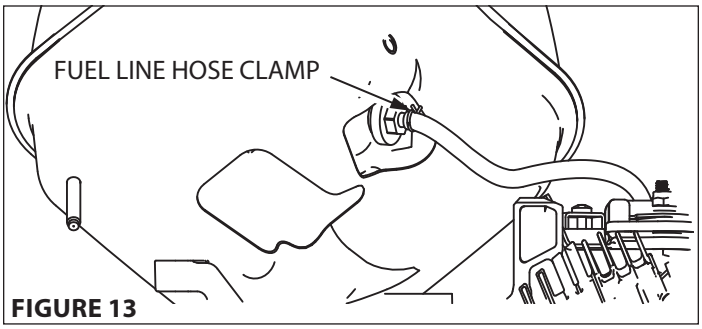


FIGURE 13

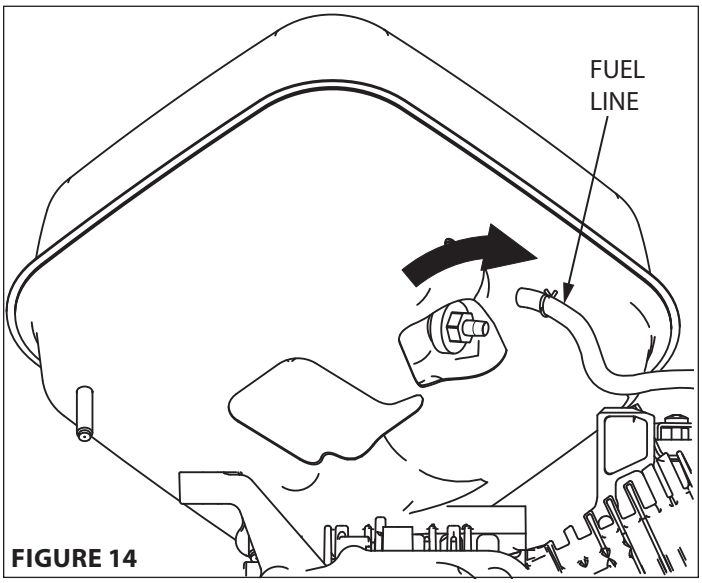


FIGURE 14

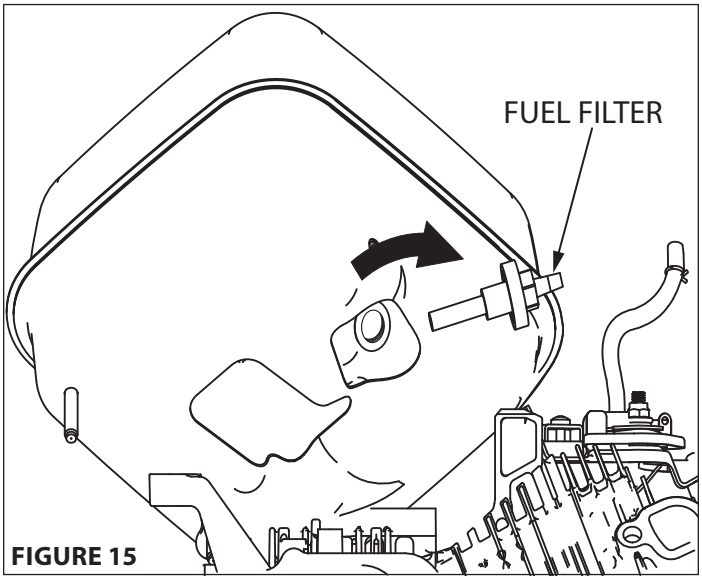


FIGURE 15

⚠ WARNING

DO NOT REMOVE FUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

FUEL IS TOXIC. DO NOT SIPHON FUEL BY MOUTH.

DO NOT STORE ENGINE INSIDE A BUILDING WITH FUEL IN THE TANK. POTENTIAL SPARKS MAY BE PRESENT CAUSING IGNITION OF FUEL AND FUEL VAPORS.

CHECK ENGINE OFTEN FOR LOOSE NUTS AND BOLTS. KEEP THESE ITEMS TIGHTENED.

FAILURE TO FOLLOWS SAFETY INSTRUCTIONS CAN CAUSE SERIOUS INJURY OR DEATH.

TRANSPORTING ENGINE

1. Never transport engine inside an enclosed space or vehicle. Fuel or fuel vapors may ignite causing serious injury or death.
2. If fuel is present in the fuel tank remove fuel or transport with an open vehicle in an upright position.
3. If an enclosed vehicle must be used, remove fuel into an approved red fuel container. DO NOT siphon by mouth.
4. Run engine or drain to use up the fuel in the carburetor and fuel tank. Always run engine in a well ventilated area.
5. Wipe away any spilled fuel from engine. Allow to dry.

STEPS FOR LONG-TERM STORAGE

(30 days or more without use)

1. Mix an appropriate amount of fuel stabilizer, such as STA-BIL®, to fresh gasoline, in the ratio recommended on the stabilizer packaging. Run the engine for five minutes to distribute the stabilizer mixture throughout the fuel system. This will prevent gum, varnish and corrosion build up in your fuel system during long-term storage for up to 12 months.
2. Store engine in its upright position.
3. Remove all debris from engine.

TROUBLESHOOTING AND REPAIR

At Ardisam we build quality and durability into the design of our products; but no amount of careful design by us, and careful maintenance by you, can guarantee a repair-free life for your Viper® Engine. Most repairs will be minor, and easily fixed by following the suggestions in the troubleshooting guide in this section.

This section will help you pinpoint the causes of common problems and identify remedies.

For more complicated repairs, you may want to rely on your retailer, an authorized service center, or contact Ardisam customer service. Ardisam will make the necessary repairs if a service center is not available. A parts breakdown is located toward the end of this manual.

We will always be glad to answer any questions you have, or help you find suitable assistance. To order parts or inquire about warranty, call or e-mail us using the contact information found in this section.

Ordering Replacement Parts

Parts can be obtained from the store where the unit was purchased or direct from the factory. To order parts visit www.ardisam.com or call 1-800-345-6007. For other general questions, you can email us at: Info@Ardisam.com.

Please include the following information with your order:

1) Part numbers
2) Part description
3) Quantity
4) Model number and serial number

SPARE PARTS

Only use approved Viper spares. Refer to the Illustrated Parts Breakdown and parts list.

⚠ WARNING

IMPROPER MAINTENANCE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION CAN CAUSE A MALFUNCTION. ALWAYS FOLLOW THE INSPECTION AND MAINTENANCE RECOMMENDATIONS AND SCHEDULES IN THIS OPERATOR'S MANUAL.

CHECK ENGINE REGULARLY FOR LOOSE NUTS AND BOLTS. KEEP THESE ITEMS TIGHTENED.

TEMPERATURE OF MUFFLER AND NEARBY AREAS MAY EXCEED 150° F (65° C). AVOID THESE AREAS.

PREVENT ACCIDENTAL STARTING:

- **ENGINE MUST BE TURNED OFF AND COOL.**
- **SPARK PLUG WIRE MUST BE REMOVED FROM SPARK PLUG BEFORE CHECKING AND ADJUSTING ENGINE OR EQUIPMENT.**

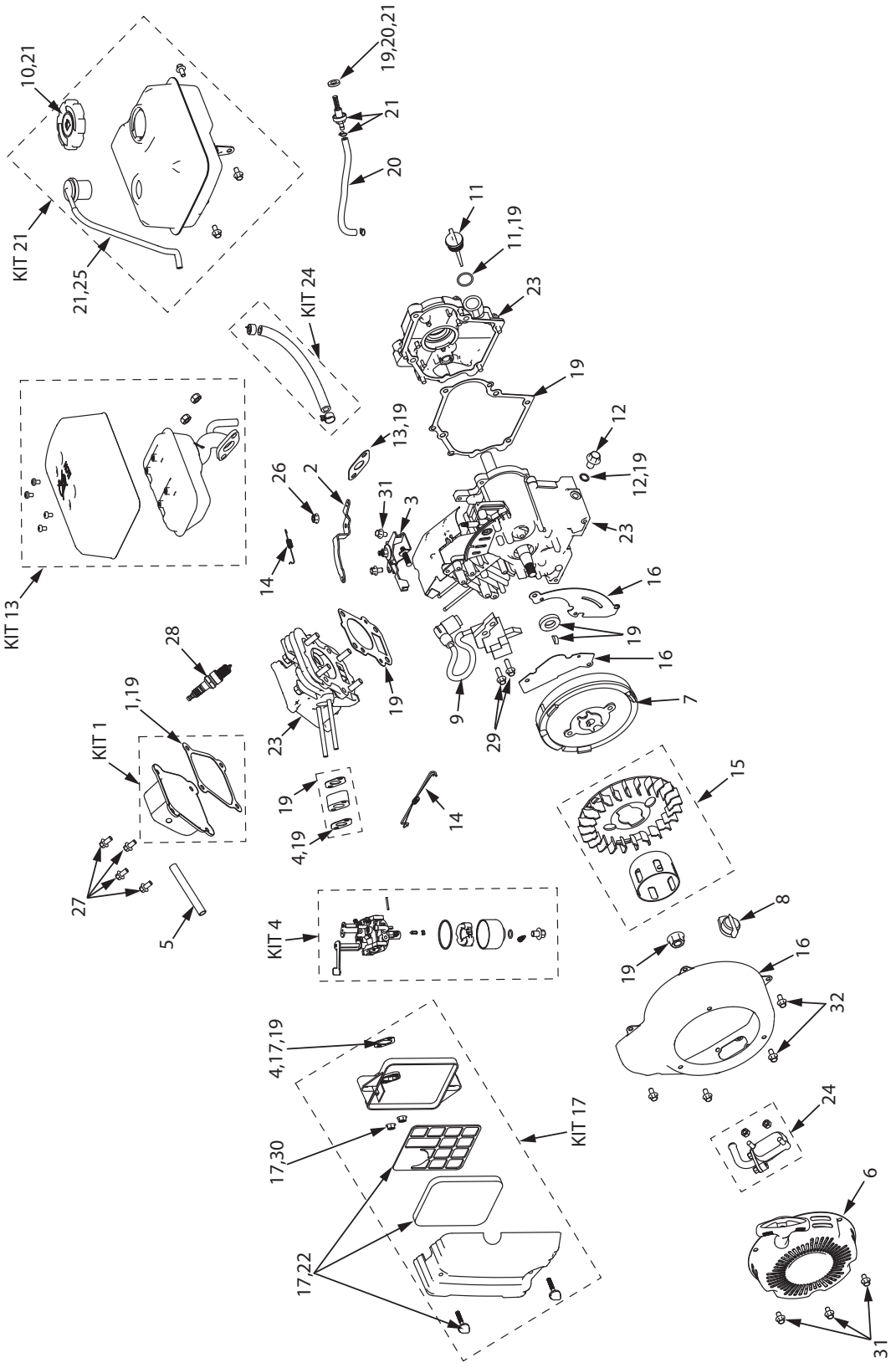
FAILURE TO FOLLOW THESE WARNINGS CAN RESULT IN SERIOUS INJURY OR DEATH.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY/ACTION
Engine will not start	1. Power switch off	1. Flip switch to **ON** position
	2. Spark plug wire disconnected	2. Connect spark plug wire to spark plug
	3. Out of fuel	3. Refuel
	4. Spark plug wet, faulty or improperly gapped	4. Clean, replace or gap spark plug
	5. Stale fuel	5. Drain old fuel and replace with fresh. Use fuel stabilizer as a future preventative measure.
Engine runs rough, floods during operation	1. Dirty air filter	1. Clean or replace air filter
	2. Choke partially engaged	2. Turn off choke
	3. Carburetor out of adjustment	3. Call factory
Engine is hard to start	1. Stale fuel	1. Drain old fuel and replace with fresh. Use fuel stabilizer as a future preventative measure.
	2. Spark plug wire loose	2. Make sure spark wire is securely attached to spark plug
	3. Dirty carburetor	3. Clean carburetor, use fuel stabilizer, new fuel can
Engine misses or lacks power	1. Clogged fuel tank or fuel filter	1. Remove and clean
	2. Clogged air filter	2. Clean or replace
	3. Improper carburetor adjustment	3. Call factory
	4. Spark plug dirty, improper gap, or wrong type	4. Replace spark plug and adjust gap to 0.030"
Engine runs, then quits	1. Fuel cap not venting	1. Replace fuel cap

Contact a service provider if above remedies fail.

ILLUSTRATED PARTS BREAKDOWN - Viper 99cc Engine



ILLUSTRATED PARTS BREAKDOWN - Viper 99cc Engine

REF NO.	PART NO.	DESCRIPTION	QTY.
1	10060	KIT VALVE COVER	1
2	10066	GOVERNOR ARM	1
3	10067	THROTTLE CONTROL	1
4	10078	KIT CARBURETOR REPLACEMENT	1
5	10079	VACUUM BREATHER TUBE	1
6	10095	RECOIL ASSEMBLY	1
7	10099	FLYWHEEL	1
8	10101	ENGINE CUTOFF SWITCH	1
9	10102	IGNITION COIL	1
10	13780	CAP FUEL TANK SEALED	1
11	10118	DIPSTICK WITH SEAL	1
12	10119	OIL PLUG WITH SEAL WASHER	1
13	13894	KIT MUFFLER	1
14	10146	KIT THROTTLE CONTROL SPRINGS	1
15	10147	KIT STARTER CUP AND BLOWER FAN	1
16	10148	KIT BLOWER HOUSING	1
17	13895	KIT AIR CLEANER	1
19	13925	KIT GASKETS	1
20	13896	KIT FUEL LINE	1
21	13897	KIT FUEL TANK	1
22	10236	KIT REPLACEMENT AIR FILTER ELEMENT	1
23	–	SHORT BLOCK (FOR REFERENCE ONLY)	1
24	13898	KIT AUXILIARY AIR INTAKE	1
25	13778	FUEL VAPOR HOSE ASSEMBLY	1
NON-SERVICED PARTS (For Reference Only)			
26	–	NUT M6 X 1.0 HHFNYLK	1
27	–	BOLT M6 X 1.0 X 12 (8 HD) HHFCS GR8.8 ZN	4
28	–	SPARK PLUG LG E5TC	1
29	–	BOLT M6 X 20 HHFCS (8 HD) GR8.8 ZN	2
30	–	NUT M6 X 1.0 HSF GR8.8 ZN	2
31	–	BOLT M6 X 1.0 X 8 HHFCS GR8.8 YL ZN	5
32	–	BOLT M6 X 1.0 X 12 HHFCS GR 8.8 ZN T/T	7
NOT SHOWN PARTS			
–	13975	KIT ALTITUDE 3000 TO 6000 FT	–
–	13976	KIT ALTITUDE 6000 TO 8000 FT	–

HIGH ALTITUDE OPERATION

Operating an engine with standard air-fuel mixture at altitudes greater than 3,000 feet will result in a fuel-rich operating condition. This can lead to increased fuel consumption, increased emissions, and the formation of carbon deposits on spark plugs that can result in difficulty starting engine. To ensure compliance with federal emission standards and avoid performance degradation, engines must be fitted with the appropriate altitude kit when operated at altitudes 3,000 feet or greater.

Altitude Kit Summary		
Altitude Kit Identification Number	**Altitude Kit Part Number**	**Altitude Range (ft above sea level)**
Altitude Kit 1#	13975	3000-6000 ft
Altitude Kit 2#	13976	6000-8000 ft

NOTICE:

1. Engines should not be operated at less than 3,000 feet when fitted with an altitude kit. Doing so may result in serious damage to engine.
2. Engines that have been modified with an altitude kit should only be operated at altitudes for which the kit is designed. Failure to use the appropriate altitude kit at altitudes in excess of 3,000 feet may result in decreased engine performance, increased fuel consumption and increased engine emissions.
3. Engine operation is not recommended in altitudes greater than 8,000 feet. Doing so will negatively affect engine performance.
4. For more information on obtaining an altitude kit, see an authorized *Viper®* dealer or contact customer service at 800-345-6007 Mondays through Fridays from 8 a.m. to 5 p.m. CST, or send an email to info@ardisam.com. Installation of altitude kits should be performed by an authorized *Viper®* service center only.

Warranty Terms and Conditions

ENGINE WARRANTY: 2-YEAR LIMITED EMISSIONS CONTROL WARRANTY
(SEE EXPLANATION OF EMISSIONS CONTROL WARRANTY STATEMENT FOR DETAILS)

Ardisam, Inc. (Ardisam), a manufacturing company, warrants this engine under a two-year limited emissions control warranty to be free from defects in materials and workmanship for the service life of the product not to exceed twenty-four consecutive months from the date of purchase for consumer applications.

*These warranties apply only to products which have not been subjected to negligent use, misuse, alteration, accident, unauthorized parts, failure to use proper fuel and oil, or if repairs have been performed at a non-authorized service facility. These warranties supersede all other warranties either expressed or implied and all other obligations or liabilities on the part of Ardisam. Ardisam, does not assume, and does not authorize any other person to assume for Ardisam, any liability in connection with the sale of Ardisam products. **To be at "No Charge," warranty work must be sent directly to and performed by Ardisam or an Ardisam Authorized Warranty Service Facility**. To obtain warranty service and/or replacement instructions, contact the Ardisam Customer Service Department at 800-345-6007. Ardisam will cover the cost of shipping only for purchasers located more than 100 miles from an Ardisam Authorized Warranty Service Facility if it is determined that warranted repair is indeed necessary. If you choose to ship your product to Ardisam for warranty repair, you must first have prior approval from Ardisam by calling the Ardisam Customer Service Department for a return material authorization number (RMA#). Under these circumstances, all items must be shipped prepaid. Ardisam will at no charge, repair or replace, at the discretion of Ardisam, any defective part which falls under the conditions stated above. Ardisam retains the right to change models, specifications and price without notice. Ardisam shall not be obligated to ship any repair or replacement product to any location outside of the United States of America or Canada.

COMBINED EXHAUST AND EVAPORATIVE EMISSIONS CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board, the United States Environmental Protection Agency and Ardisam, Inc., are pleased to explain the emission control system warranty on your 2014-2015 model year small off-road engine/equipment. In the United States and California, new small off-road engine/equipment must be designed, built and equipped to meet the State's stringent anti smog standards. Ardisam must warrant the emission control system on your small off-road engine/equipment for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine/equipment.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, catalytic converter, fuel tanks, fuel lines, fuel caps, valves, canisters, filters, vapor, hoses, clamps, connectors, and other associated components. For engines less than or equal to 80 cc, only the fuel tank is subject to the evaporative emission control warranty requirements.

Where a warrantable condition exists, Ardisam will repair your small off-road engine/equipment at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

This emissions control system is warranted for two years. If any emission-related part on your equipment is defective, the part will be repaired or replaced by Ardisam

OWNER'S WARRANTY RESPONSIBILITIES:

As the small off-road engine/equipment owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Ardisam recommends that you retain all receipts covering maintenance on your small off-road engine/equipment, but Ardisam cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine/equipment owner, you should however be aware that Ardisam may deny you warranty coverage if your small off-road engine/equipment or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road engine/equipment to a Ardisam distribution center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Ardisam customer service department at 800-345-6007. Or E-mail: info@ardisam.com.

DEFECTS WARRANTY REQUIREMENTS:

(A) The warranty period begins on the date the engine/equipment is delivered to an ultimate purchaser.

(B) General Emissions Warranty Coverage. Ardisam warrants to the ultimate purchaser and each subsequent owner that the engine/equipment is:

(1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board; and

(2) Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.

(C) The warranty on emissions-related parts will be interpreted as follows:

(1) Any warranted part that is not scheduled for replacement as required maintenance in the written instructions required by subsection (D) must be warranted for the warranty period defined in Subsection (B)(2). If any such part fails during the period of warranty coverage, it must be repaired or replaced by Ardisam according to Subsection (4) below. Any such part repaired or replaced under the warranty must be warranted for the remaining warranty period.

(2) Any warranted part that is scheduled only for regular inspection in the written instructions required by subsection (D) must be warranted for the warranty period defined in Subsection (B)(2). A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for the remaining warranty period.

(3) Any warranted part that is scheduled for replacement as required maintenance in the written instructions required by subsection (D) must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part must be repaired or replaced by Ardisam according to Subsection (4) below. Any such part repaired or replaced under warranty must be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(4) Repair or replacement of any warranted part under the warranty must be performed at no charge to the owner at a warranty station.

(5) Notwithstanding the provisions of Subsection (4) above, warranty services or repairs must be provided at all Ardisam distribution centers that are franchised to service the subject engine/equipment.

(6) The owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

(7) Ardisam is liable for damages to other engine/equipment components proximately caused by a failure under warranty of any warranted part.

(8) Throughout the emissions warranty period defined in Subsection (B)(2), Ardisam must maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(9) Any replacement part may be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of Ardisam.

(10) Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts will be grounds for disallowing a warranty claim. Ardisam will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

(11) Ardisam issuing the warranty shall provide any documents that describe that manufacturer's warranty procedures or policies within five working days of request by the Air Resources Board.

COMBINED EXHAUST AND EVAPORATIVE EMISSIONS CONTROL WARRANTY STATEMENT CONTINUED

(D) Emission Warranty Parts List. (For all displacements).

(1) Fuel Metering System

(i) Carburetor and internal parts (and/or pressure regulator or fuel injection system).

(ii) Air/fuel ratio feedback and control system.

(iii) Cold start enrichment system.

(iv) Fuel Tank.

(2) Air Induction System

(i) Controlled hot air intake system.

(ii) Intake manifold.

(iii) Air filter.

(3) Ignition System

(i) Spark Plugs.

(ii) Magneto or electronic ignition system.

(iii) Spark advance/retard system.

(4) Exhaust Gas Recirculation (EGR) System

(i) EGR valve body, and carburetor spacer if applicable.

(ii) EGR rate feedback and control system.

(5) Air Injection System

(i) Air pump or pulse valve.

(ii) Valves affecting distribution of flow.

(iii) Distribution manifold.

(6) Catalyst or Thermal Reactor System

(i) Catalytic converter.

(ii) Thermal reactor.

(iii) Exhaust manifold.

(7) Particulate Controls

(i) Traps, filters, precipitators, and any other device used to capture particulate emissions.

(8) Miscellaneous Items Used in Above Systems

(i) Electronic controls.

(ii) Vacuum, temperature, and time sensitive valves and switches.

(iii) Hoses, belts, connectors, and assemblies.

(E) Emission Warranty Parts List. (For evaporative emissions engines less than or equal to 80cc).

(1) Fuel Tank.

(F) Emission Warranty Parts List. (For evaporative emissions engines greater than 80cc).

(1) Fuel Metering System.

(i) Fuel Tank

(2) Miscellaneous Items Used in Above Systems.

(i) Fuel Caps, valves, canisters, filters, vapor hoses, clamps, connectors, belts, and assemblies.

Ardisam will furnish with each new engine/equipment written instructions for the maintenance and use of the engine/equipment by the owner.

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