

# VIPER<sup>®</sup>

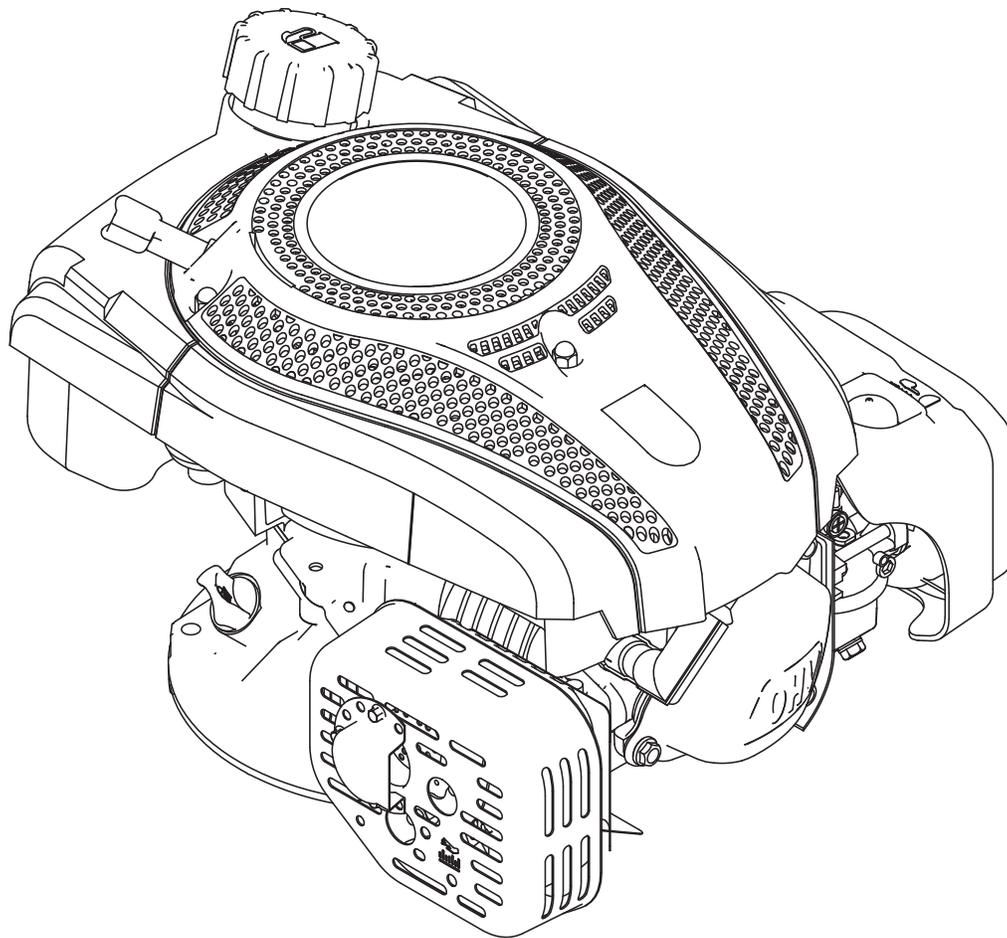
ENGINES

Owner's Manual

150CC  
Viper 4-Cycle Engine

Model #: 27787

ENGLISH



THIS INSTRUCTION BOOKLET CONTAINS **IMPORTANT** SAFETY INFORMATION. PLEASE READ AND KEEP FOR FUTURE REFERENCE.

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**INTRODUCTION**

Thank you for purchasing your product from Viper®. We have worked to ensure that this product meets the highest standards for usability and durability. With proper care, your purchase 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. Due to continuous product improvements, product images may not be exact. Some assembly may be required.

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. All persons to whom rent/loan this unit must have access to and understand this information. This manual should remain with the product even if it is resold.

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**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).

**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.

**NOTICE**

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

**IMPORTANT**

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

 **CAUTION**

**CAUTION INDICATES A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE.**

 **WARNING**

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

 **DANGER**

**DANGER INDICATES A HAZARD WHICH, IF NOT AVOIDED, CERTAINLY WILL RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.**

 **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.**

⚠ **HOT GASES ARE A NORMAL BY-PRODUCT OF A FUNCTIONING INTERNAL COMBUSTION ENGINE. FOLLOW ALL SAFETY INSTRUCTIONS TO PREVENT BURNS AND FIRES.**

⚠ **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 PUT THE ON/OFF SWITCH TO THE OFF POSITION.**

**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.
- Always wipe up excess (spilled) fuel from engine before starting. Clean up spilled fuel immediately. If fuel is spilled do not start the engine but move product and fuel container from area. Clean up spilled fuel and allow to evaporate and dry after wiping and before starting.

- Allow fuel fumes/vapors to escape from the area before starting engine.
- Test the fuel cap for proper installation before starting and using the engine.
- Always run the engine with the fuel cap properly installed on the engine.
- Never smoke while refilling fuel tank or while operating the engine.
- Do not store engine with fuel in fuel tank indoors. Fuel and fuel vapors are highly explosive.
- 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.

**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.

**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.

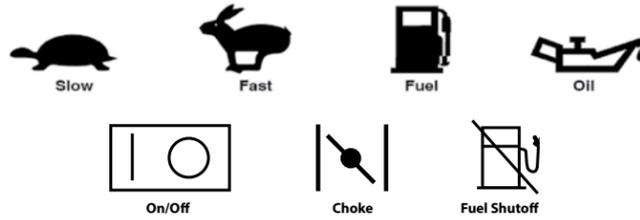
Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operated this equipment safely and effectively, we have placed several safety labels on the engine to remind you of this important information while you are operating the unit.

Safety symbols are illustrated on page 6, and are shown here to help familiarize you with the content of the safety messages

you will see as you perform normal operations. Please, review these symbols 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.

**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.



**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.



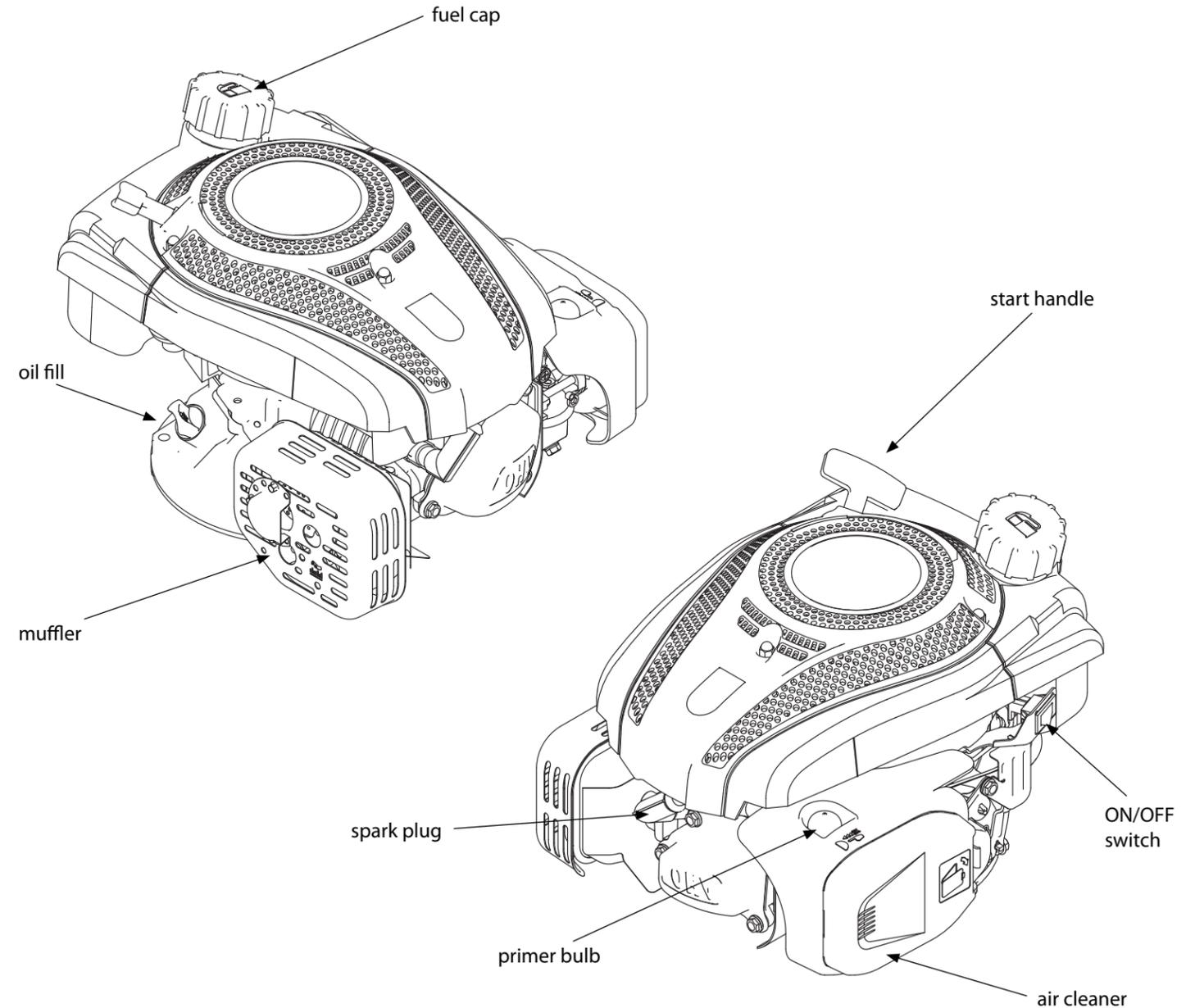
**SPECIFICATIONS**

Displacement/ Cycle	150cc; 4-Stroke
Ignition Type	Electronic ignition
Cooling System	Forced air cooling
Idling Carburetor Adjust	1900 +/- 100 RPM
Valve Clearance	Cold engine-Intake: 0.006 - 0.008 in (0.15-.020 mm); Exhaust: 0.006 - 0.008 in (0.15-0.20 mm)
Maximum Torque	9.5 NM/2500 RPM (7.00 ft-lb/2500 RPM)
Bore and Stroke	65 x 45.2 mm
Spark Plug Type	0.024-0.031" (0.6-0.8 mm gap) Torch K7RTC
Recommended Fuel Type	Minimum 87 octane gasoline with NO ethanol content.  <i>NOTE: If using an ethanol blended fuel, a fuel stabilizer, mixed to manufacturer specifications, is recommended. DO NOT use E85 ethanol blend fuels.</i>
Fuel Tank Capacity	Approximately 0.26 gallons (1.0 L)
Drive Shaft Type	7/8 in (22.2 mm) diameter, 2.17 in (55 mm) from end of shaft to mounting surface, 0.16 in (4 mm) square x 1.14 in (29 mm) keyway, drilled and tapped 3/8-24 UNF-2B x 0.91 in (23 mm)
Start Type	Recoil
Speed	3600 RPM
Oil Capacity and Type	15.22 fl-oz (0.45 liters); 10W-30 (in freezing weather use 5W-30)
Weight	25.4 lb, (11.5 kg)
Overall Dimensions	380 mm x 335 mm x 270 mm

**FEATURES**

**ENGINE COMPONENTS**

This is a 4-cycle air-cooled engine. The engine utilizes a vertical 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 "Choosing Oil Type" chart on page 9.
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.
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.

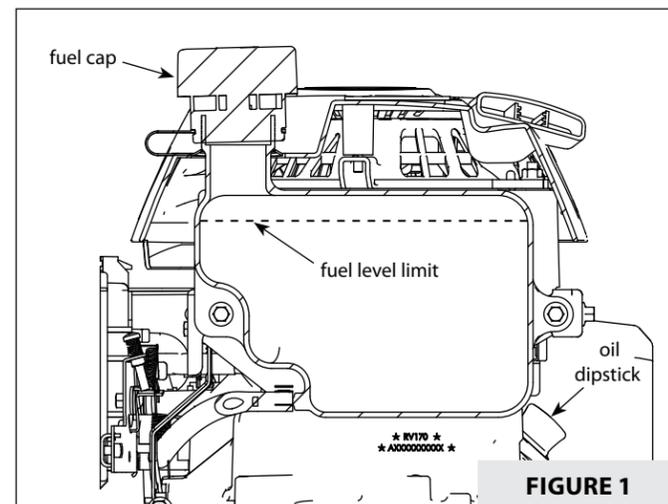
9. Check the equipment powered by this engine. Review the operator's manual provide with the equipment powered by this engine for any safety and warning precautions and/or procedures that should be followed before starting this engine.

**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.**

*NOTE: If using ethanol blends, it is recommended you also use an ethanol fuel treatment to protect against corrosion. Do Not use E85 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. Leave room for fuel expansion.*
4. Replace cap and remove any spilled fuel before operating.



**⚠ WARNING**

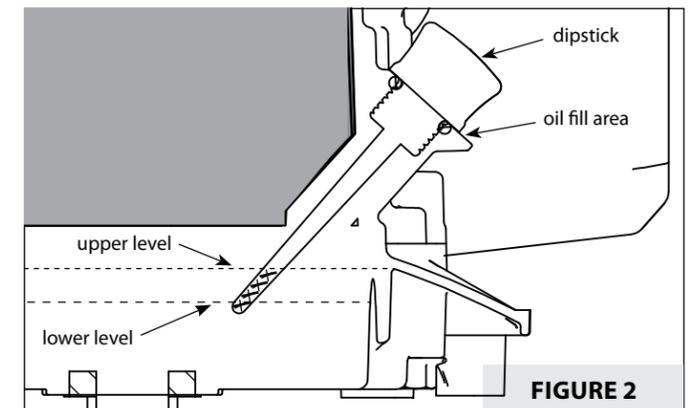
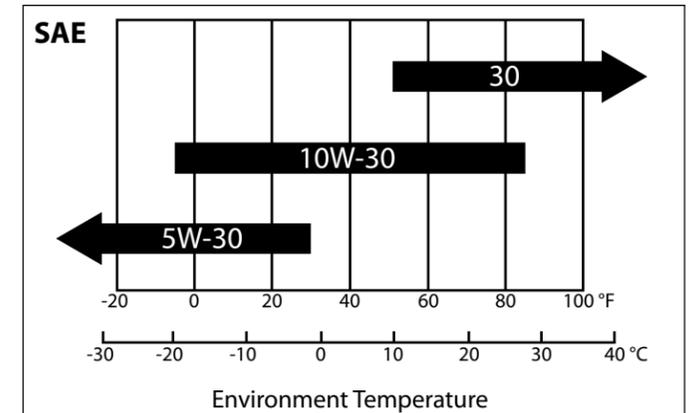
- ⚠ ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.
- ⚠ ENGINE OIL IS HAZARDOUS TO YOUR HEALTH. DISPOSE OF OIL APPROPRIATELY. USE A SAFE DISPOSAL/RECYCLING CENTER.
- ALWAYS PERFORM A PRE-OPERATION INSPECTION BEFORE EACH OPERATION AND CORRECT ANY PROBLEM.
- 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. Slide out dipstick and check oil.
5. If oil level is below the marking on the oil dipstick, refill to upper level. **SEE FIGURE 2.**
6. Change oil if contaminated.

**CHOOSING OIL TYPE**



**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.

**CAUTION**

- ▲ OPERATING ENGINE ON ANGLES GREATER THAN 25 DEGREES WILL CAUSE THE ENGINE TO LOSE LUBRICATION AND SEIZE.

**STARTING AND STOPPING THE ENGINE**

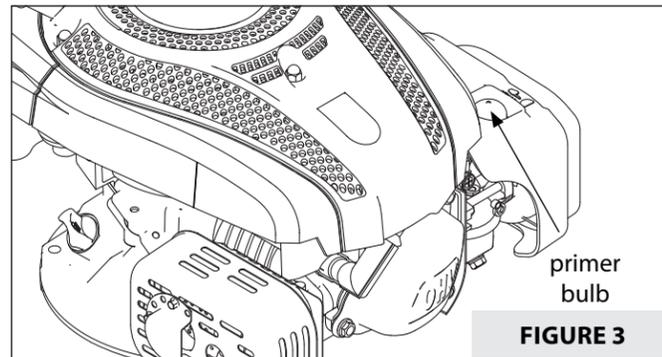
Review "safety and warning precautions" and "pre-operation inspection" sections before starting engine.

**MANUAL-START ENGINE**

1. Move engine to a well-ventilated area, always outdoors, to prevent carbon monoxide poisoning.
2. Move to an area away from flames or sparks, to avoid ignition of vapors if present.
3. Remove all debris from air cleaner holes and fuel cap to ensure proper air flow.
4. Move the ON/OFF switch to ON
5. Press primer bulb three times. Let bulb fully recover between each depression. **SEE FIGURE 3**
6. 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 slowly. Repeat this step until engine starts.

**To Stop the Engine:**

1. Move the ON/OFF switch to OFF
2. 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.



primer bulb  
**FIGURE 3**

**MAINTENANCE AND STORAGE**

Please read the maintenance schedule, found in the accompanying combined exhaust and evaporative emissions control warranty statement, 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 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 warranty service.**

**ENGINE MAINTENANCE**

For daily maintenance checks, review "pre-operation inspection" section and EPA Emission Warranty Statement (*included with this product*).

**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 °F, use SAE 30 or SAE 10W-30 motor oil. Use SAE 5W-30 or SAE 10W if temperatures are below 32 °F. **DO NOT USE SAE 10W-40 MOTOR OIL.**

**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.

**WARNING**

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

**WARNING**

- ▲ NEVER RUN YOUR ENGINE IN A POORLY VENTILATED AREA. THE EXHAUST FROM ENGINE MAY CONTAIN POISONOUS CARBON MONOXIDE. BREATHING IT WOULD CAUSE SHOCK, UNCONSCIOUSNESS, AND EVEN DEATH.

**OIL MAINTENANCE**

After the first 10 hours, or after the first month of operating a new Viper<sup>®</sup> Engine the oil should be replaced, and every 30 hours of operating time thereafter. The oil should be changed every 10 hours if used under severe conditions, such as in high temperatures or under heavy loads, otherwise changed weekly. Check oil periodically; do not overfill.

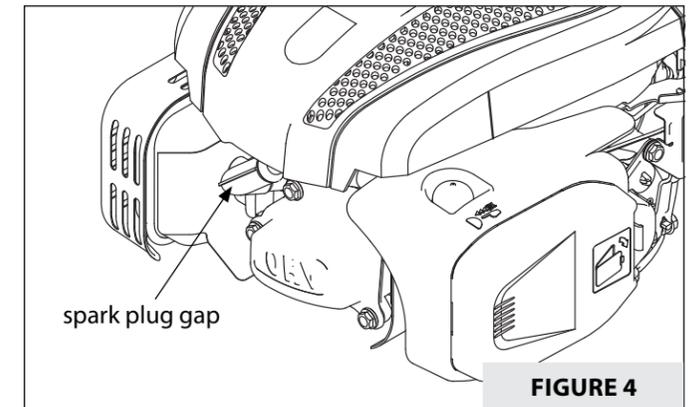
**CHANGING OIL**

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 4.**
2. Remove dipstick and carefully tip the engine toward the dipstick side to empty oil from oil fill area. Empty oil into a suitable oil container and dispose of oil properly. **SEE FIGURE 2.**
3. Tip engine back onto a level surface and fill with appropriate oil to the top of the marking on the dipstick. **SEE FIGURE 2.**
4. Reinsert dipstick and tighten. **SEE FIGURE 2.**

**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.



**FIGURE 4**

## AIR FILTER

Refer to maintenance schedule for suggestions on when to service your air filter. **Washing filter is not recommended. When dirty, replace filter.**

### Removing/Installing Air Filter. SEE FIGURE 5.

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

## SPARK PLUG

The recommended spark plug is a DK7RTC. The spark plug is located to the left of the valve cover. **SEE FIGURE 4.**

### Checking And Changing Spark Plug

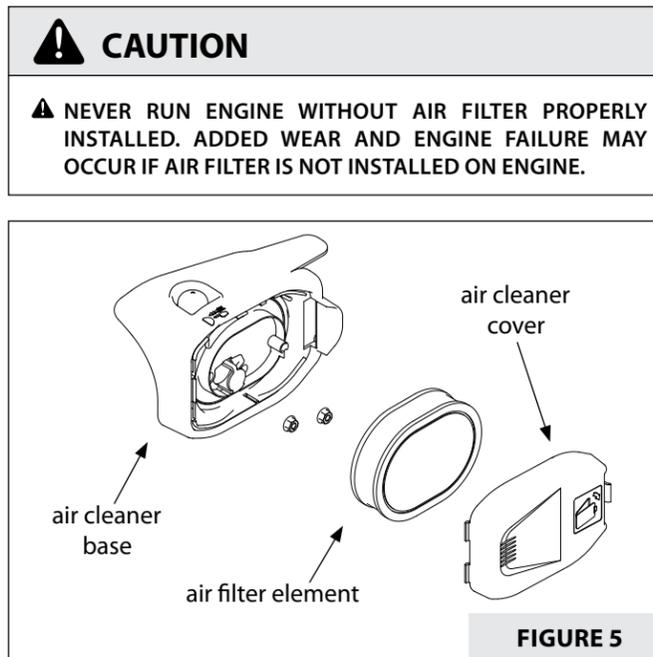
1. Check spark plug every 50 operating hours.
2. Disconnect the spark plug cap, and clean any debris from around the spark plug area.
3. Remove spark plug and replace if any of the following occur; pitted electrodes, burned electrodes, cracked porcelain, or deposits around electrodes.
4. After analysis, seat spark plug and tighten with spark plug wrench to compress the sealing washer.
  - Reinstall original spark plug, tighten additional 1/2 turn.
  - Installing new spark plug, adjust spark plug gap to .024" - .031" (0.6-0.8 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 it out thoroughly.**



## CARBURETOR

- Never tamper with factory setting of the carburetor.
- If adjustment is needed, contact customer service.

## FUEL FILTER

### CLEANING OR REPLACING FUEL FILTER

1. Disconnect spark plug wire from spark plug. Remove spark plug.
2. Drain fuel from tank before attempting to clean/replace filter.
3. Remove hose clamp closest to gas tank.
4. Pull filter out from end of hose.
5. Filter may be washed with kerosene or similar solvent.
6. If filter is extremely dirty or torn, replace with new filter.
7. Reassemble with clean or new filter, and fill with clean, fresh gasoline. Check for leaks prior to starting engine.

## 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

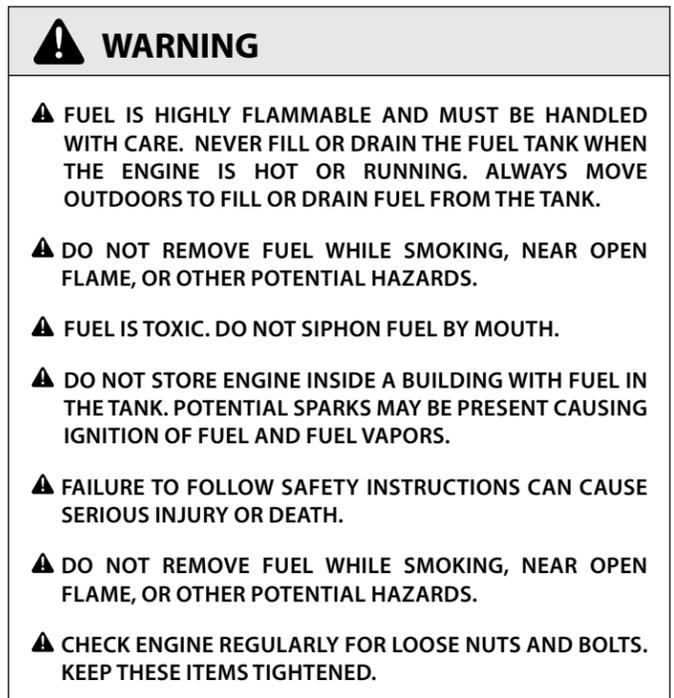
(30 days or more without use)

1. Add fuel stabilizer according to manufacturer's instructions.
  - a) Start engine and run until engine runs itself out of any residual fuel left in carb bowl and fuel lines. (It is normal for the engine to run two to three minutes before the fuel is completely out of system.)
2. Run engine for 10-15 minutes to ensure that the stabilizer reaches the carburetor.
3. Remove the remainder of the fuel from the fuel tank into an approved fuel container.
4. Store engine in its upright position.
5. Remove all debris from engine.
6. 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.

## 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<sup>®</sup> 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



please contact one of our authorized service centers (find these on our website at [www.getearthquake.com/Locations/ServiceCenter](http://www.getearthquake.com/Locations/ServiceCenter)) or contact Ardisam Customer Service. Ardisam will make the necessary repairs or resolution if a service center is not available. We will always be glad to answer any questions you have, or help you find suitable assistance. To order parts or inquire about warranty, please visit "contact us" on our website [www.getearthquake.com](http://www.getearthquake.com).

### ORDERING REPLACEMENT PARTS

Parts can be obtained directly from the factory. To order parts visit [www.getearthquake.com](http://www.getearthquake.com) or call 1-800-345-6007. Please include the following information with your order: part numbers; part description; quantity; and model number and serial number.

### SPARE PARTS

Only use approved Viper<sup>®</sup> spares.



# **VIPER<sup>®</sup>**

## **ENGINES**

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