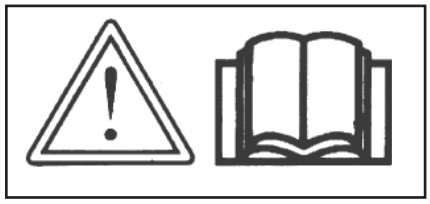
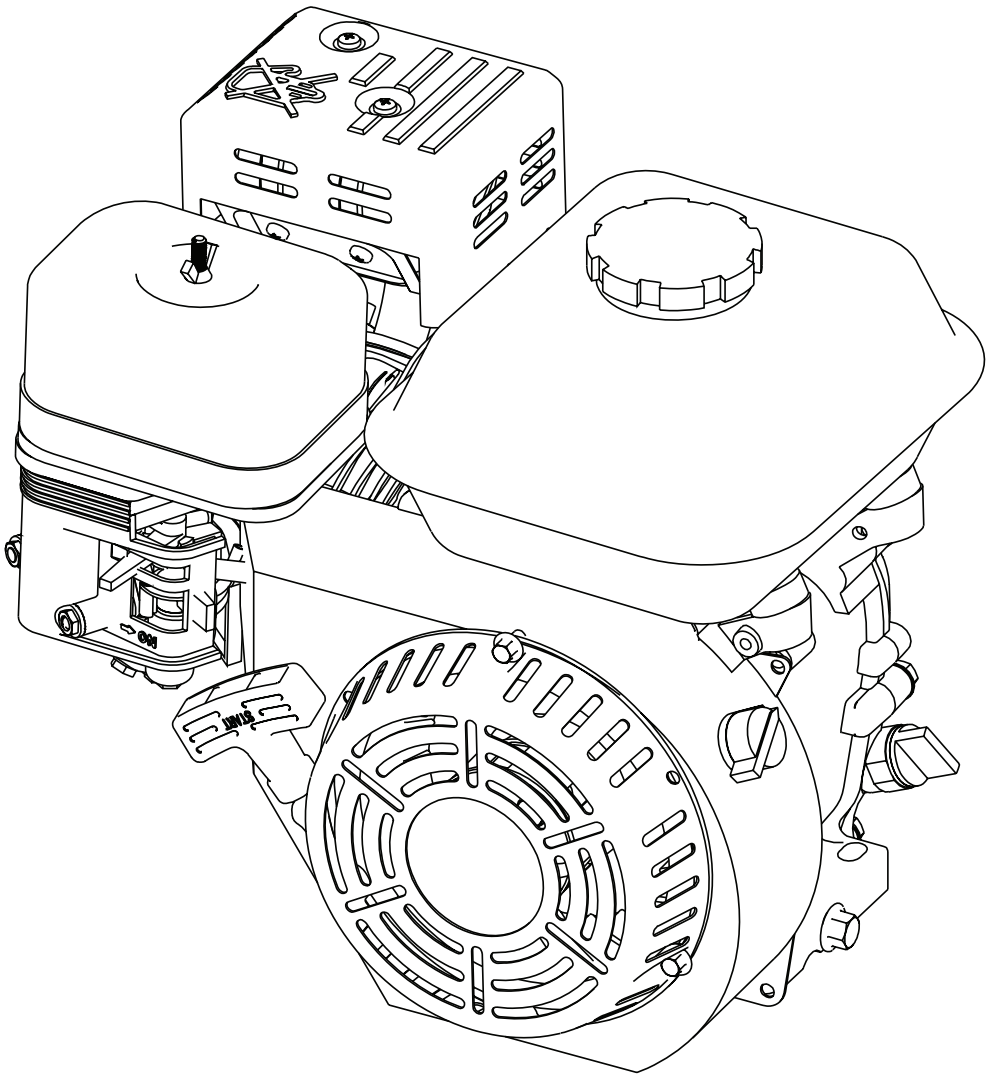
Operator's Manual
Original Operating Instructions

Viper® 196cc 4-Cycle Engine





Includes Model: 92000

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P/N: 64793
Rev. 08/22/11

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

Ardisam 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 engine model number and serial number **(SEE FEATURES SECTION FOR NUMBER LOCATIONS)** 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.getearthquake.com, or by mailing it to: Viper® Engines, 1160 Eighth Avenue, Cumberland, WI 54829. If you do not have a computer, 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

OPERATOR'S RESPONSIBILITY

Accurate, safe and effective use of this engine is the operator's responsibility.

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

SAFETY MESSAGES

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

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

This symbol points out important safety instructions which if not followed could endanger your personal safety.

BEFORE OPERATING ENGINE:

⚠ WARNING

READ ENTIRE OPERATING AND MAINTENANCE INSTRUCTIONS FOR THIS PRODUCT AND THE INSTRUCTIONS FOR THE EQUIPMENT THIS ENGINE POWERS. FAILURE TO FOLLOW INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH. OPERATE THE ENGINE ACCORDING TO THE SAFETY INSTRUCTIONS OUTLINED HERE AND INSERTED THROUGHOUT THE TEXT. ANYONE WHO USES THIS ENGINE 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 YOU CAN BE HURT OR YOUR EQUIPMENT 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

CERTAIN COMPONENTS IN THIS PRODUCT AND ITS RELATED ACCESSORIES CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.

⚠ WARNING

FAILURE TO COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS CAN RESULT IN LOSS OF ENGINE CONTROL, SERIOUS PERSONAL INJURY TO YOU AND/OR BYSTANDERS, AND RISK OF EQUIPMENT AND PROPERTY DAMAGE.

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 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.

⚠ 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.

⚠ CAUTION

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.

- 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. 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.
- 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 engine.
- Always run the engine with fuel cap properly installed on the engine.
- If the fuel cap has a vent screw, always unscrew fuel cap vent screw while engine is running.
- Do not smoke while handling fuel or operating engine.
- Do not store engine with fuel in fuel tank indoors. Fuel and fuel vapors are highly explosive.
- If fuel cap has a vent screw, screw down fuel cap vent screw tightly for storage.
- 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. Remove the ignition key if equipped with an electric start.
- 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 SYMBOLS

The following symbols may be used on your engine to alert you to potential hazards or to give you guidance in operating your engine. Look over them and understand their meanings before operating your engine.

Safety or Hazard Symbols


Fire hazards


Wear eye protection


Shock hazard


Hot surfaces


Toxic fumes


Moving parts


Read manual before operation


Hot! Do not touch!

Operational Control Symbols


Slow


Fast


Fuel


Oil


Choke


On/Off


Fuel Shutoff

SPECIFICATIONS

Displacement/Stroke	196 cc; 4-stroke
Ignition Type	Electronic ignition
Cooling System	Forced air cooling
Idling Carburetor Adjust	1440 +/- 160 RPM
Valve Clearance	.05-.08 mm
Maximum Torque	10-N.M./2800 RPM
Bore and Stroke	96 x 54 mm
Spark Plug Type	F7TC, NGK: BP7HS, CHAMPION: N10YC
Recommended Fuel Type	Unleaded gasoline with limited ethanol content. Add fuel stabilizer.
Fuel Tank Capacity	0.95 gallon (3.6 liters)
Drive Shaft Type	Horizontal, 3/4" straight, threaded shaft with ball bearings. Direction: counterclockwise (facing shaft); Length: 2-1/4"; thread: M16 x 1.5
Start Type	Recoil
Speed	3600 RPM
Oil Capacity and Type	20.2 oz, ~0.63 quart (0.6 liters); SAE 30 (in freezing weather use 5W30)
Dry Weight	35.27 lb (16 kg)
Overall Dimensions	15.35" x 12.6" x 13.58" (361mm x 287mm x 340mm)

FEATURES

⚠ WARNING

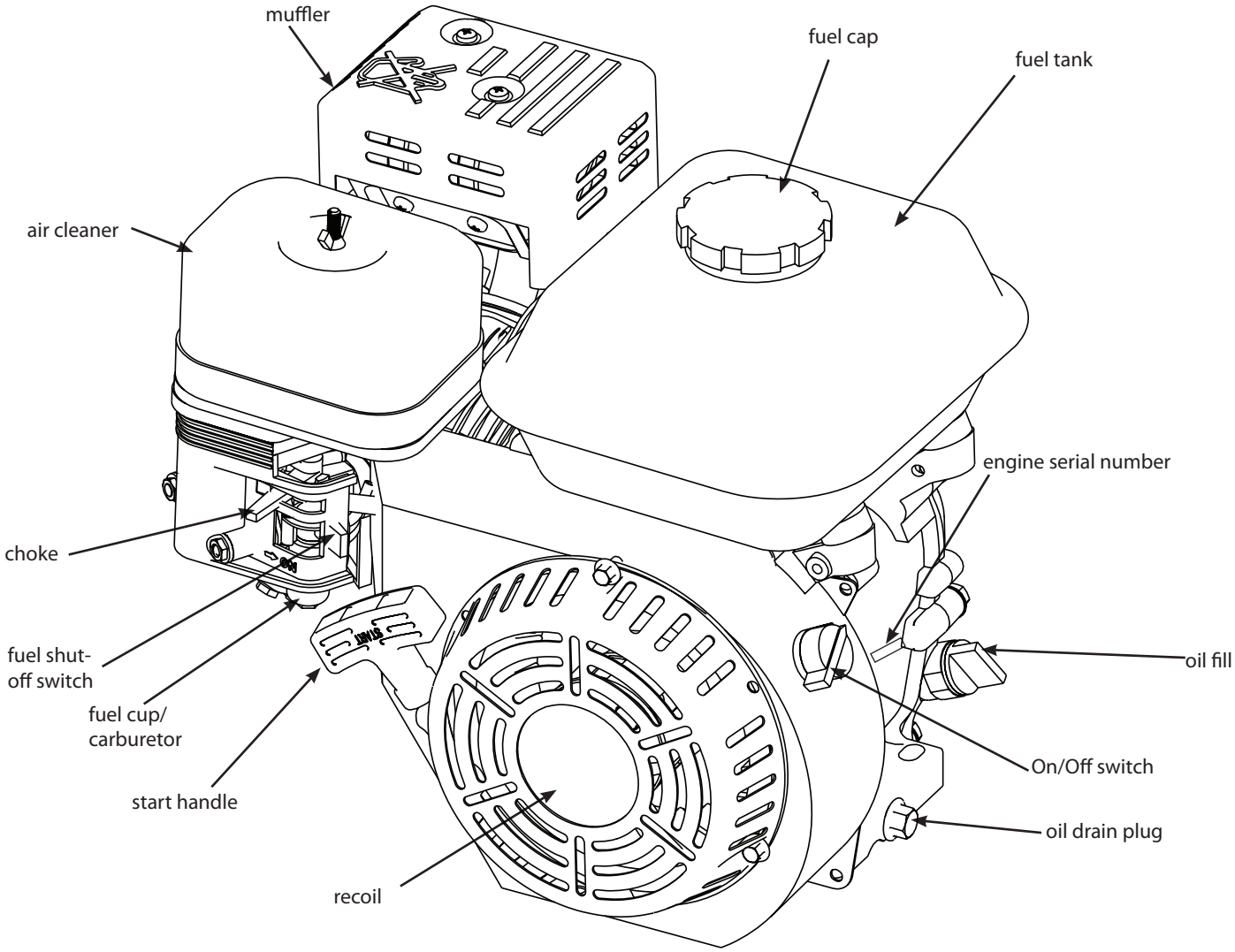
DO NOT REFUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

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 THE TANK.

⚠ IMPORTANT

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE. IF ENGINE IS STARTED WITHOUT OIL, ENGINE MAY BE DAMAGED BEYOND REPAIR AND WILL NOT BE COVERED BY WARRANTY.

This is a 4-cycle air cooled engine. The 196cc engine utilizes a horizontal shaft and an oil slinger lubricated system.

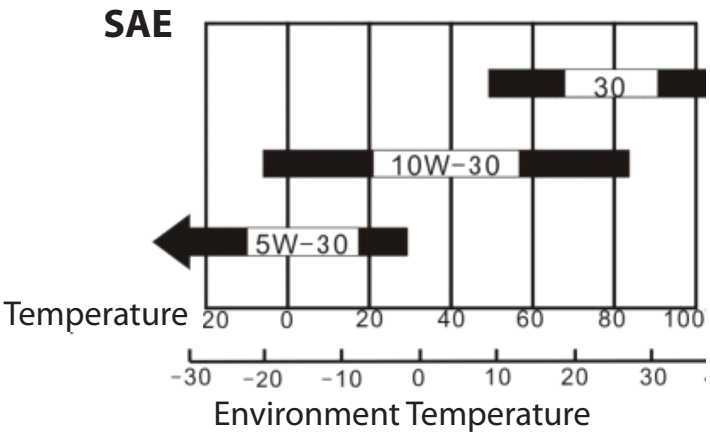


OPERATION

PRE-OPERATION INSPECTION

1. Check that the engine is equipped with proper amount and type of oil. For the most appropriate type of oil to use, see chart below.
2. Check the engine has 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.

Choosing Oil Type



⚠ WARNING

IMPROPERLY MAINTAINING THIS ENGINE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION, CAN CAUSE A MALFUNCTION WHICH COULD RESULT IN SERIOUS INJURY OR DEATH. ALWAYS PERFORM A PRE-OPERATION INSPECTION BEFORE EACH OPERATION AND CORRECT ANY PROBLEM.

⚠ 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.

⚠ CAUTION

FOR THE SAFETY OF THE USER, AND TO MAXIMIZE THE LIFE OF THE ENGINE, IT IS CRUCIAL TO TAKE TIME TO CHECK THE CONDITION OF THE ENGINE. PROBLEMS MUST BE CORRECTED BEFORE OPERATING.

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

⚠ IMPORTANT

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

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 1.**
2. Slide out dipstick and wipe clean with cloth. **SEE FIGURE 1.**
3. Reinsert and tighten dipstick.
4. Slide out dipstick and check oil.
5. If oil level is below the top thread of the oil fill hole, refill to upper level. **SEE FIGURE 1.**
6. Change oil if contaminated.

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. See specification chart for oil capacity.

CHECKING AND FILLING 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. **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 2**.
   Note: Do not overfill.

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

⚠ WARNING

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 THE TANK.

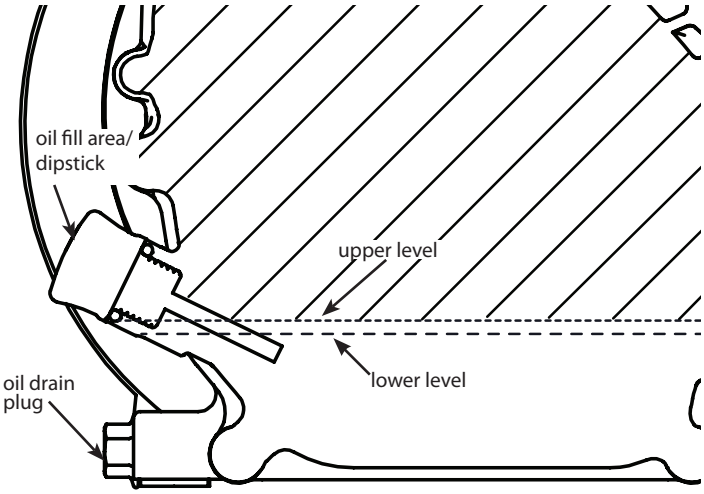


Figure 1

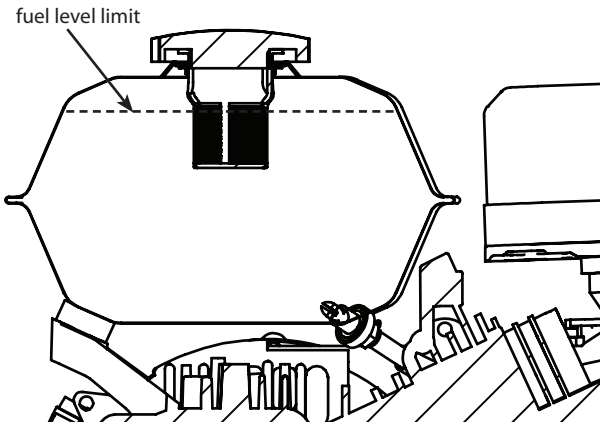


Figure 2

STARTING AND STOPPING 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.

Manual-Start Engine

1. Move the fuel valve lever toward the starter handle (ON position).
2. Move engine to a well-ventilated area, always outdoors, to prevent carbon monoxide poisoning.
3. Move to an area away from flames or sparks, to avoid ignition of vapors if present.
4. Remove all debris from air cleaner holes and fuel cap to ensure proper air flow.
5. Move throttle 1/3 of the way toward the highest speed position.
6. Close the choke lever:
   - If the engine is cold or the ambient temperature is low, close the choke lever fully. **SEE FIGURE 3.**
   - If the engine is warm or the ambient temperature is high, open the choke lever half-way or keep it fully open. **SEE FIGURE 4 AND 5.**

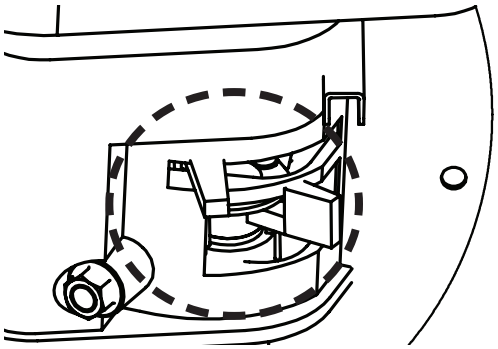
⚠ WARNING

CARBON MONOXIDE GAS IS TOXIC. INHALATION CAN CAUSE UNCONSCIOUSNESS AND DEATH.

NEVER LEAVE ENGINE RUNNING WHILE UNATTENDED.

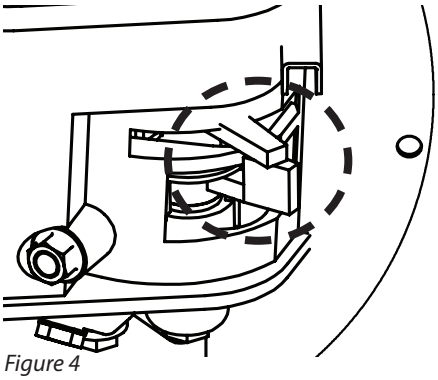
⚠ CAUTION

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



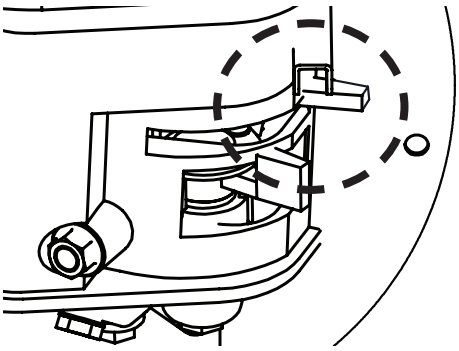
"Closed Choke" position

Figure 3



"Half Choke" position

Figure 4



"Full Choke" position

Figure 5

7. Turn the On/Off switch to the ON position. **SEE FIGURE 6.**
8 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.
9. After engine begins operating, move choke lever to "Half Choke." **SEE FIGURE 4.**
10. Run engine for 30 to 45 seconds at "Half Choke" position until engine warms up.
11. After starting the engine, slowly move the choke lever to the "Closed Choke" position as the engine warms up. Move throttle to desired speed. **SEE FIGURE 3.**

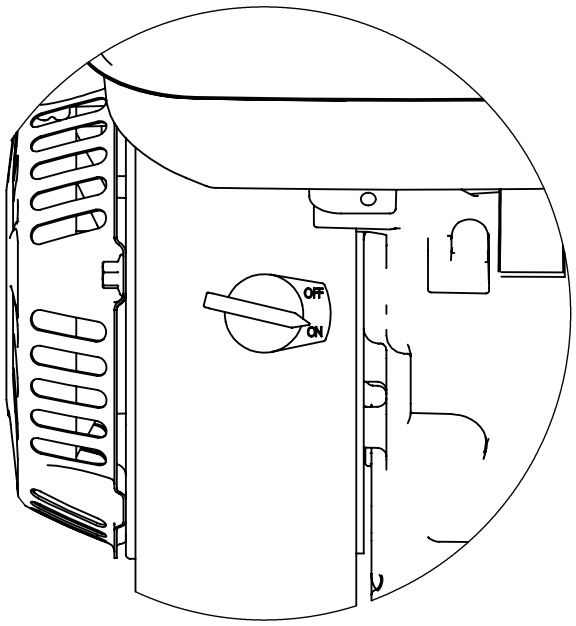


Figure 6

Electric-Start Engine

1. Repeat steps 1-6 under "Manual-Start Engine" heading on previous page.
2. Insert key and turn to start.
3. Refer to steps 8-10 under "Manual-Start Engine" heading.

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. This will cool the head of the engine and prevent vapor locking in extremely hot conditions or under severe load.
2. On manual-start models, turn the On/Off switch to the OFF position. For electric-start engines, turn the key to the OFF position. **SEE FIGURE 7.**
3. Close the fuel valve.
4. 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.

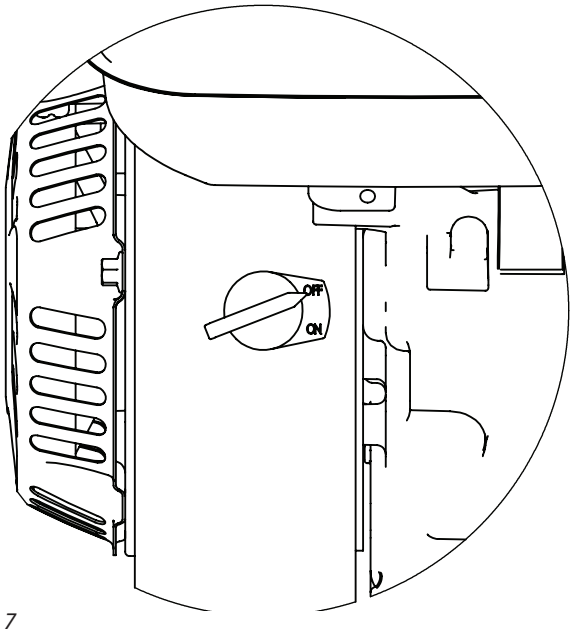


Figure 7

Stopping the Engine with the Fuel Valve:

Close the fuel valve by moving it away from the starter handle. Wait until the engine stops. Avoid letting fuel remain in the carburetor over long periods, or the passages of the carburetor may become clogged with impurities and malfunction may result.

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 WHICH COULD LEAD TO SERIOUS INJURY OR DEATH. ALWAYS FOLLOW THE INSPECTION AND MAINTENANCE RECOMMENDATIONS AND SCHEDULES IN THIS OPERATOR'S MANUAL.

⚠ CAUTION

TO PREVENT ACCIDENTAL STARTING:

AVOID INJURY! ENGINE MUST BE TURNED OFF AND COOL AND SPARK PLUG WIRE MUST BE REMOVED FROM SPARK PLUG BEFORE CHECKING AND ADJUSTING ENGINE OR EQUIPMENT.

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

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

MAINTENANCE SCHEDULE

MAINTENANCE ITEM		Every 8 hours (daily)	Every 50 hours or monthly	Every 100 hours or seasonally	Every 300 hours or yearly
Clean Engine and Check Bolts and Nuts		X			
Engine Oil	Check	X			
(See Lubrication section)	Change *	(initial 5 hours)	X		
Oil in Gear Reduction (if equipped)	Change		X		
Air Filter	Check	X		X	
(See Air Filter section)	Clean **		X		
	Replace		X		X
Spark Plug (Gap .030")	Check-Adjust			X	
(See Spark Plug section)	Replace				X
Fuel Filter	Clean ***		X		
(See Fuel Filter section)	Replace				

* Perform initial oil change after first 5 hours of operation, then every 50 hours or every season

** Service more frequently under dusty conditions

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

ENGINE MAINTENANCE

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

Lubrication

Choose engine oil that meets or surpasses the latest API service classification. For temperatures higher than 32º F, use SAE 30 or SAE 10W-30 motor oil. Use SAE 5W-30 or SAE 10W if temperatures are below 32º F. **DO NOT USE SAE 10W-40 MOTOR OIL.**

Oil Maintenance

After the first five hours 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 engine uses a battery; disconnect at negative terminal. **SEE FIGURE 8.**
2. Remove oil drain plug and empty oil into suitable oil container. Dispose of oil properly. **SEE FIGURE 9.**
3. Reinstall drain plug. Remove dipstick (if applicable) or oil fill cap. **SEE FIGURE 9.**
4. Fill with appropriate oil to "FULL" or top line of dipstick; otherwise to top thread of oil fill hole. **SEE FIGURE 9.**
5. Reinsert dipstick or oil fill cap and tighten.

NOTE: See specification chart for approximate oil capacity.

⚠ CAUTION

OIL IS HAZARDOUS WASTE

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

⚠ CAUTION

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

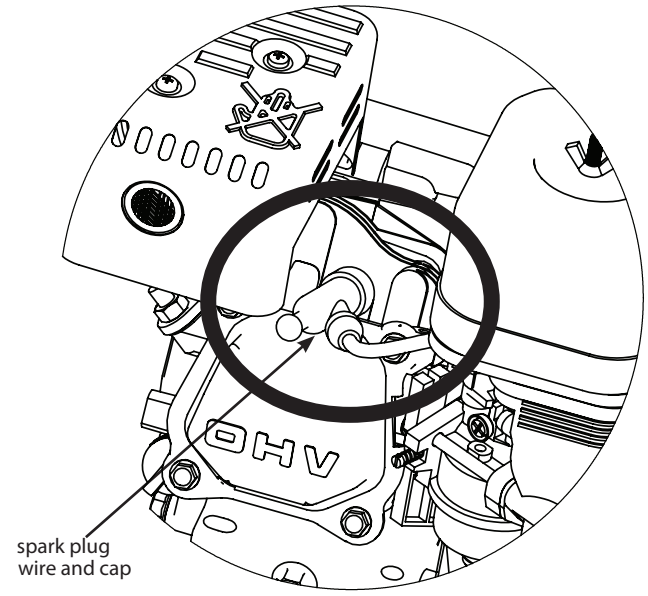


Figure 8: Spark plug location

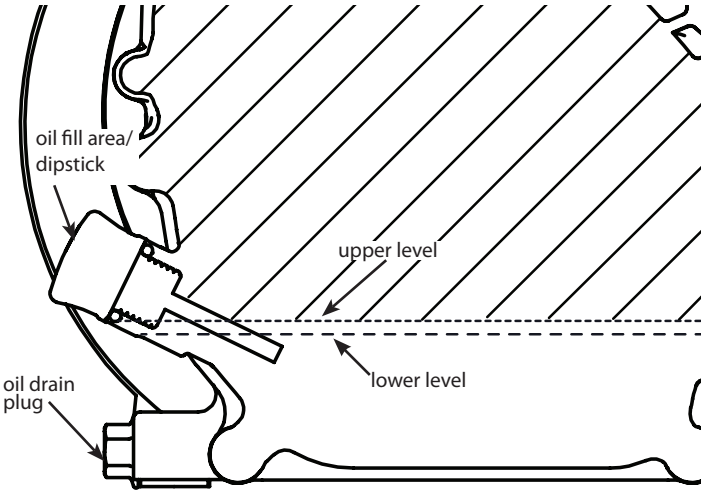


Figure 9: Filling and changing oil

AIR FILTER

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

Removing/Installing Air Filter (SEE FIGURE 10).

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

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 OR let air dry overnight.
4. Attach the filter and air cleaner cover to the engine.

SPARK PLUG

The recommended spark plug is a NGK F7TC. See parts breakdown for Viper® part number.

Checking And Changing Spark Plug

1. Check spark plug every 50 operating hours.
2. Disconnect the spark plug cap, and clean any debris form 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 9 on previous page.**
   - Reinstall original spark plug, tighten additional 1/2 turn.
   - Installing new spark plug, adjust spark plug gap to .030" (0.6-0.7 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.

⚠ WARNING

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 FUEL TANK.

⚠ CAUTION

NEVER RUN ENGINE WITHOUT AIR FILTER PROPERLY INSTALLED. ADDED WEAR AND ENGINE FAILURE MAY OCCUR IF AIR FILTER IS NOT INSTALLED ON ENGINE. SEE FIGURE 16.

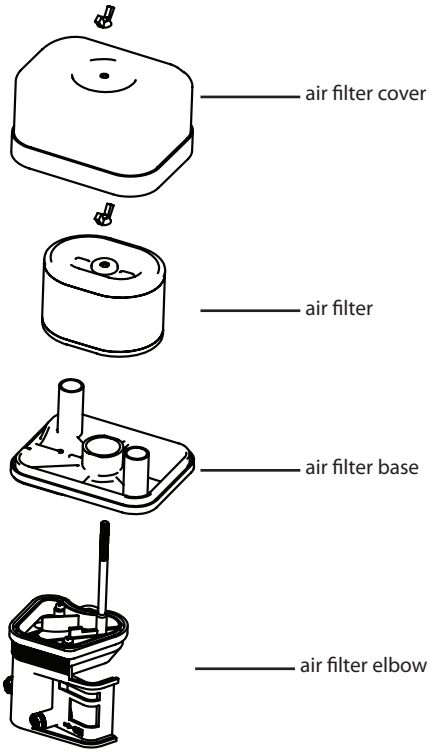


Figure 10

CARBURETOR

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

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 two nuts holding muffler to 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 engine and disconnect the hose clamp. **SEE FIGURE 11 and 12.**
7. Remove fuel tank filter by using proper size socket to turn filter counter clockwise.
8. Filter may be washed with kerosene or similar solvent.
9. If filter is extremely dirty or torn replace with new filter.
8. Reassemble and fill with clean fresh gasoline. Check for leaks prior to starting engine.

BATTERY (ELECTRIC MODELS ONLY)

Viper® Engines use a 12 V 7.0 AH/20HR battery. Never connect the battery in reverse polarity avoiding a short circuit to the battery charging system. Always connect the positive (+) battery cable to the battery terminal before hooking up the negative (-) battery cable.

Connection

1. Connect positive (+) battery cable to the starter solenoid terminal.
2. Connect negative (-) battery cable to an engine mounting bolt, frame bolt, or other proficient ground connection.
3. Connect positive (+) battery cable to the positive (+) battery terminal.
4. Connect negative (-) battery cable to the negative (-) battery terminal.
5. Coat both terminals and cable ends with grease.

⚠ CAUTION

BATTERIES MUST BE REMOVED FROM MACHINE AND STORED IN A WARM LOCATION WHEN AMBIENT TEMPERATURE FALLS BELOW FREEZING.

⚠ WARNING

BATTERY MAY EXPLODE

- **BATTERY MAY EXPLODE IF PROPER PROCEDURE IS NOT FOLLOWED, CAUSING SERIOUS HARM TO PEOPLE NEARBY.**
- **KEEP AWAY FROM ALL SPARKS, OPEN FLAMES, AND SMOKING MATERIALS.**

Figure 11

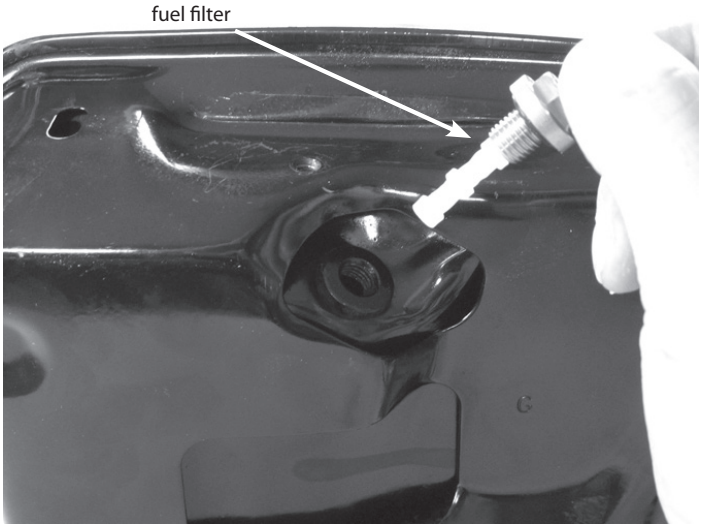


Figure 12

TRANSPORTING ENGINE

1. Shut fuel off by closing fuel shutoff valve. Failure to turn fuel off may cause raw fuel to enter the crank case contaminating the engine oil and providing insufficient lubrication. **SEVERE ENGINE DAMAGE MAY RESULT. SEE FIGURE 13.**
2. Never transport engine inside an enclosed space or vehicle. Fuel or fuel vapors may ignite causing serious injury or death.
3. If fuel is present in the fuel tank remove fuel or transport with an open vehicle in an upright position.
4. If an enclosed vehicle must be used, remove fuel into an approved red fuel container. DO NOT siphon by mouth.
5. Run engine or drain to use up the fuel in the carburetor and fuel tank. Always run engine in a well ventilated area.
6. 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.
2. Run engine for 10-15 minutes to ensure that the stabilizer reaches the carburetor.

   a) Turn fuel shut off to OFF position and 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.)
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.

⚠ WARNING

FAILURE TO FOLLOW MAINTENANCE INFORMATION CAN CAUSE DEATH OR SERIOUS INJURY.

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

AVOID INJURY! NEVER STORE ENGINE WITH FUEL IN THE TANK INSIDE A BUILDING. POTENTIAL SPARKS MAY BE PRESENT CAUSING IGNITION OF FUEL AND FUEL VAPORS.

⚠ WARNING

AVOID INJURY! TO AVOID INJURY OR DEATH, NEVER SIPHON FUEL BY MOUTH.

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

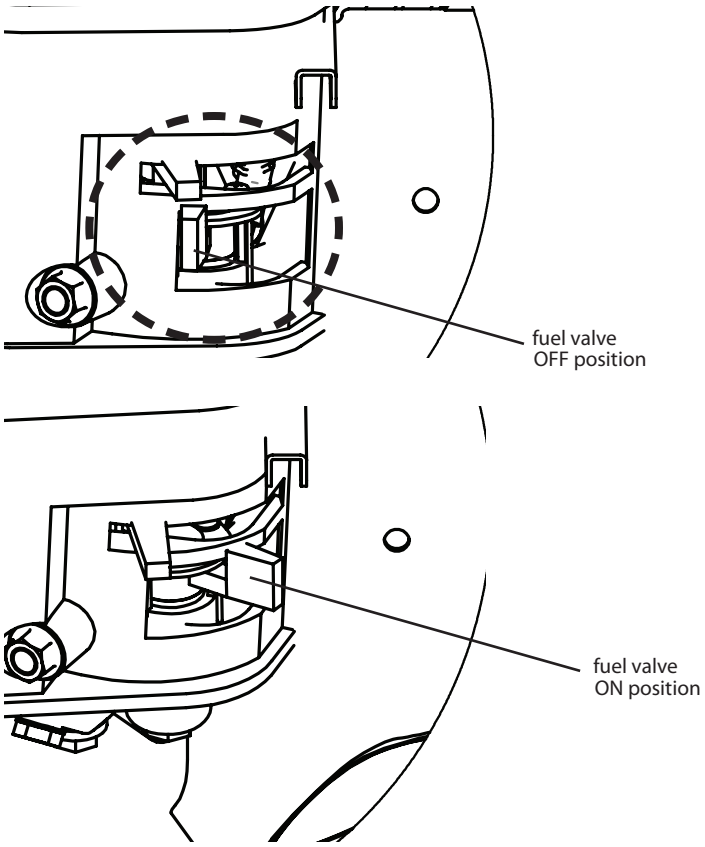


Figure 13

TROUBLESHOOTING AND REPAIR

At Viper®, 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 Viper®. Viper® 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

To order parts visit www.ardisam.com or call 1-800-345-6007.

For other general questions, you can e-mail 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.

⚠ CAUTION

PRACTICE SAFETY AT ALL TIMES. ENGINE MUST BE TURNED OFF AND ALLOWED TO COOL AND SPARK PLUG WIRE MUST BE DISCONNECTED BEFORE ATTEMPTING ANY MAINTENANCE OR REPAIR.

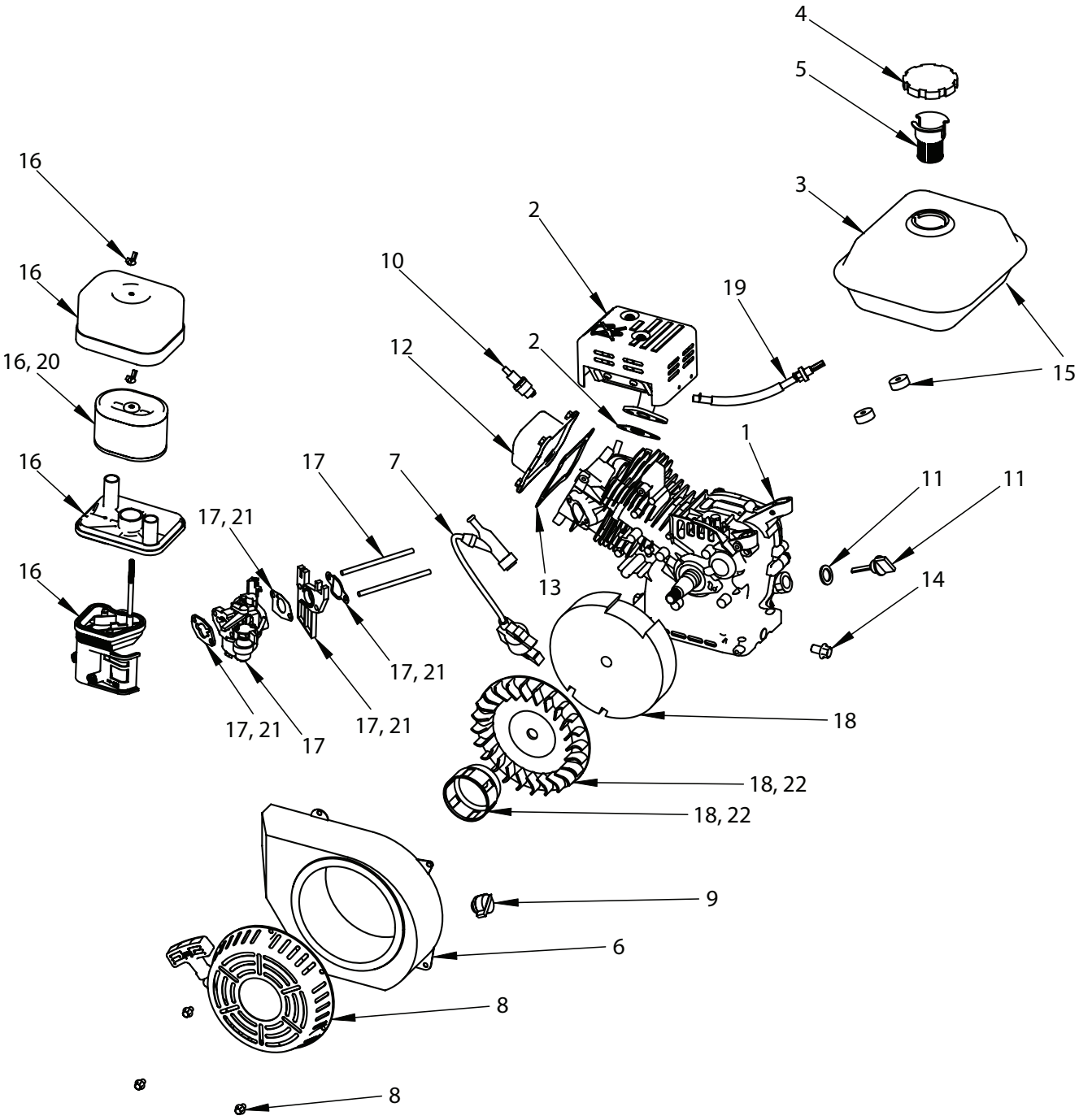
TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY/ACTION
Engine will not start	1. Power switch off	1. Flip switch to **ON** position
	2. Fuel valve off	2. Check fuel valve is on
	3. Spark plug wire disconnected	3. Connect spark plug wire to spark plug
	4. Out of fuel	4. Refuel
	5. Spark plug wet, faulty or improperly gapped	5. Clean, replace or gap spark plug
Electric Start	5. Battery discharged	5. Recharge battery
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. Always use fuel stabilizer
	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 .030"
Engine runs, then quits	1. Fuel cap not venting	1. Replace fuel cap

Contact a service provider if above remedies fail.

PARTS BREAKDOWN

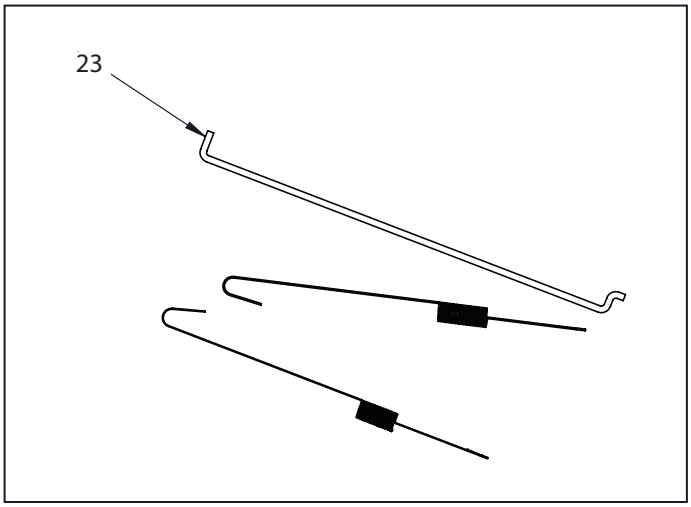
196cc ENGINE MAIN PARTS EXPLOSION

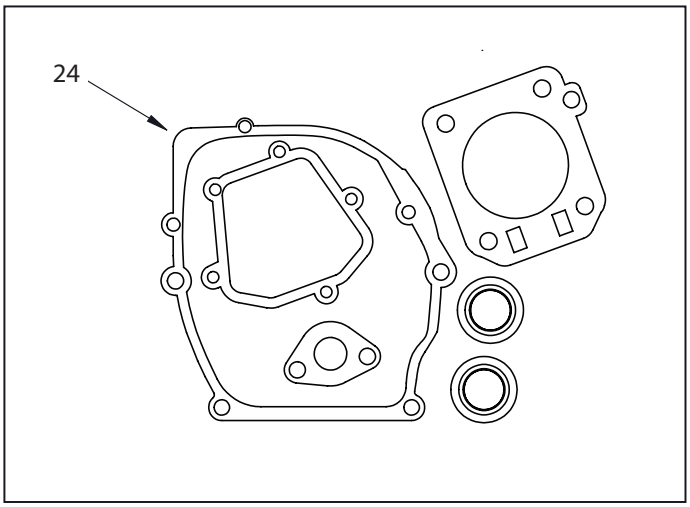


196CC ENGINE MAIN PARTS LIST

KEY	PART #	DESCRIPTION	QTY.
1	64629	SHORT BLOCK ENGINE 196CC	1
2	64686	KIT MUFFLER 196CC VIPER	1
3	64632	TANK FUEL 196CC VIPER	1
4	6327	CAP FUEL TANK	1
5	64147	FILTER FUEL TANK 196CC VIPER	1
6	64237	COVER FLYWHEEL 196CC VIPER	1
7	64684	IGNITION COIL 196CC VIPER	1
8	913446	RECOIL STARTER 196CC	1
9	913435	SWITCH ENGINE ON/OFF	1
10	64212	SPARK PLUG F7TC 196CC VIPER	1
11	913328	DIPSTICK WITH SEAL 196CC VIPER	2
12	64795	COVER VALVE 196CC	1
13	64795	GASKET OVERHEAD VALVE	1
14	67032	BOLT M10 X 1.25 X 15 HHFCS GR8.8 ZN	2
15	64632	FUEL TANK SHOCK PAD	2
16	64685	KIT AIR FILTER ASSEMBLY	1
17	64634	KIT CARBURETOR REPLACEMENT 196CC	1
18	64792	KIT FLYWHEEL196CC	1
19	64633	KIT FUEL LINE AND FILTER 196CC	1
20	642812	FILTER ELEMENT 196CC VIPER	1
21	64781	KIT CARBURETOR GASKET 196CC	1
22	64791	KIT STARTER CUP AND FAN 196CC	1
23	64780	GOVERNOR SPRING KIT	1
24	64779	ENGINE GASKET KIT	1

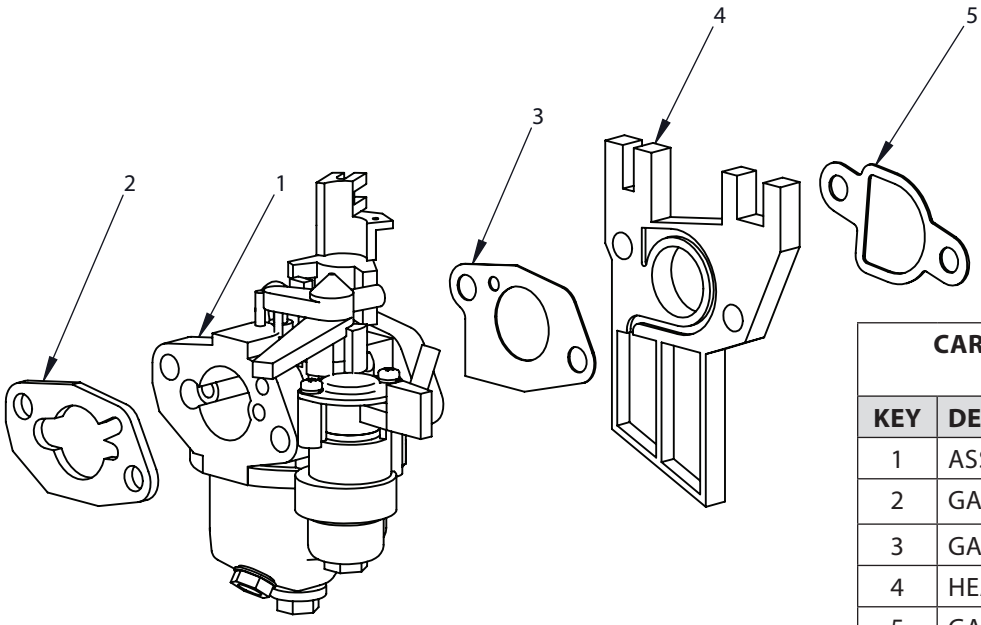
SERVICE KITS
(PARTS ONLY AVAILABLE AS KIT)





SERVICE KITS (CONTINUED)

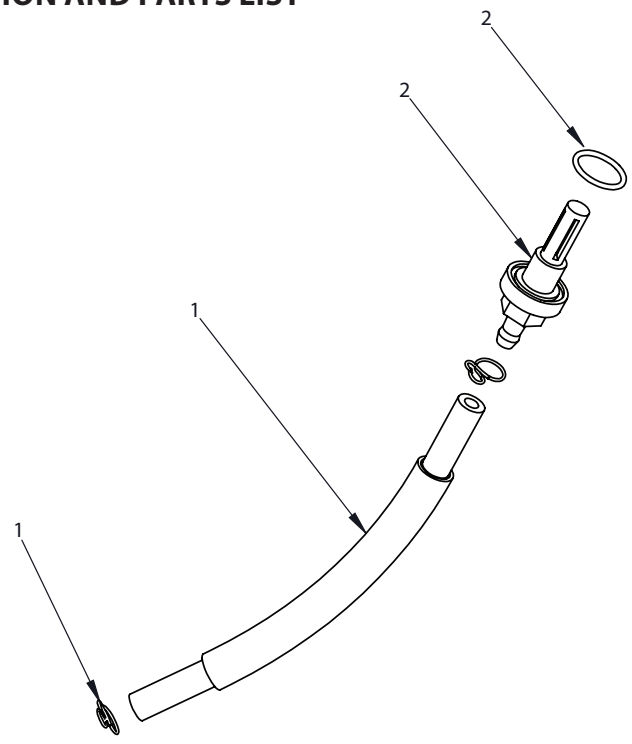
CARBURETOR REPLACEMENT KIT PARTS EXPLOSION AND PARTS LIST



CARBURETOR REPLACEMENT KIT PART NUMBER 64634		
KEY	**DESCRIPTION**	**QTY.**
1	ASSEMBLY CARBURETOR	1
2	GASKET AIR CLEANER	1
3	GASKET CARBURETOR	1
4	HEAT SHIELD CARBURETOR	1
5	GASKET INLET	1

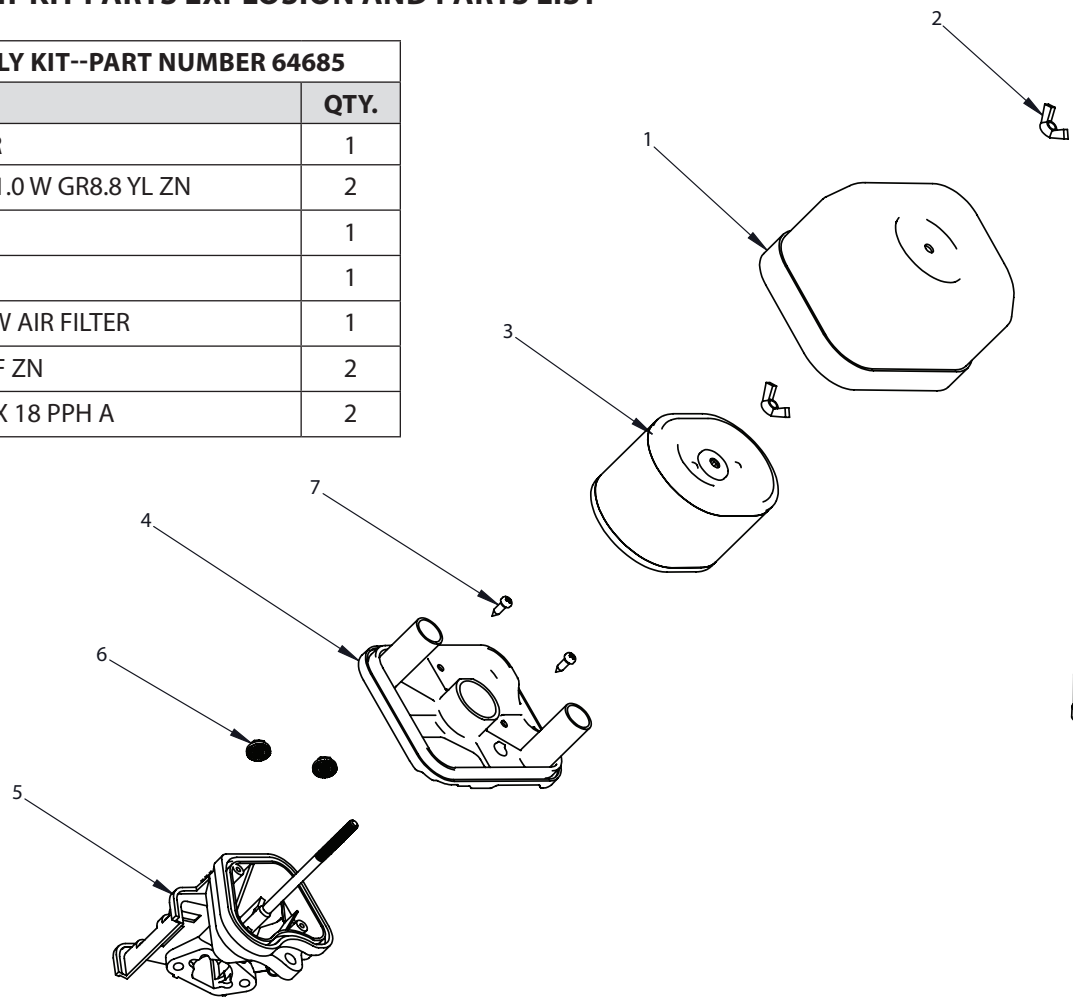
FUEL LINE AND FILTER KIT PARTS EXPLOSION AND PARTS LIST

FUEL LINE AND FILTER KIT PART NUMBER 64633		
KEY	**DESCRIPTION**	**QTY.**
1	FUEL LINE ASSEMBLY	1
2	FUEL FILTER	1

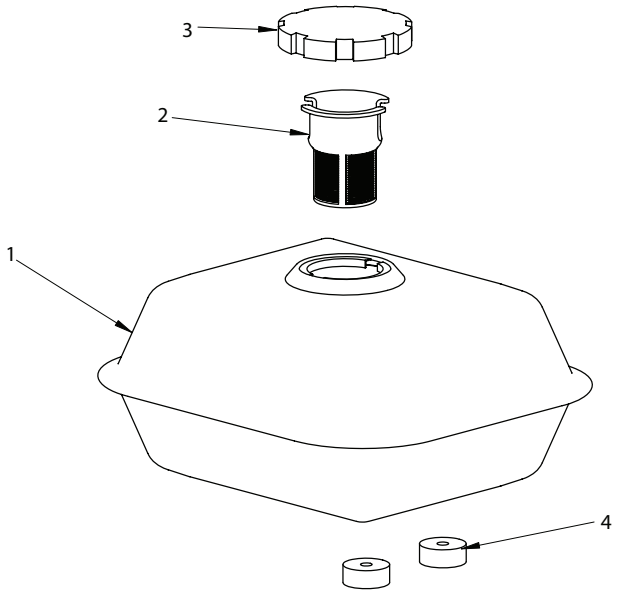


AIR FILTER ASSEMBLY KIT PARTS EXPLOSION AND PARTS LIST

AIR FILTER ASSEMBLY KIT--PART NUMBER 64685		
KEY	**DESCRIPTION**	**QTY.**
1	COVER AIR FILTER	1
2	NUT WING M6 X 1.0 W GR8.8 YL ZN	2
3	FILTER ELEMENT	1
4	BASE AIR FILTER	1
5	ASSEMBLY ELBOW AIR FILTER	1
6	NUT M6 X 1.0 HSF ZN	2
7	SCREW M4 X 1.4 X 18 PPH A	2

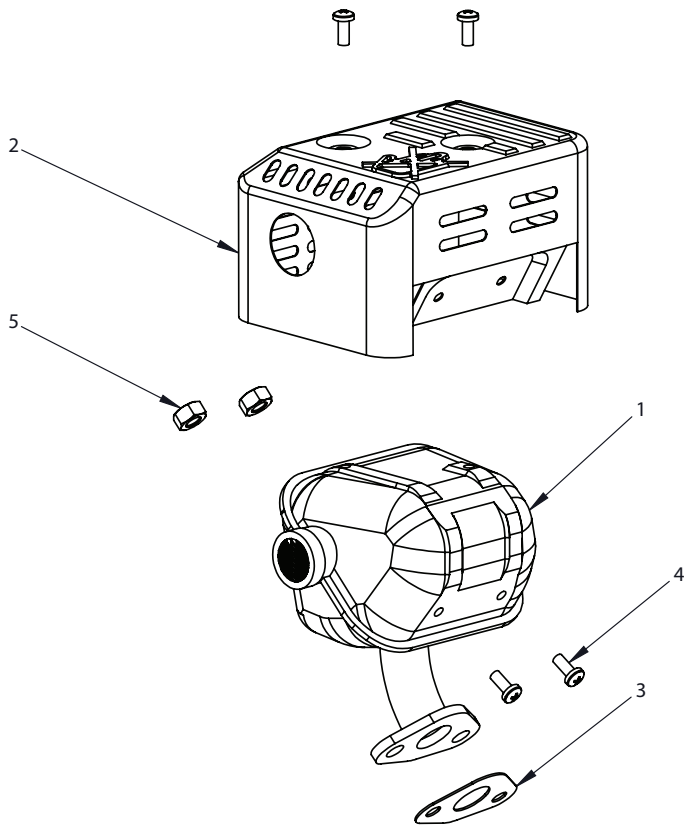


FUEL TANK KIT PARTS EXPLOSION AND PARTS LIST



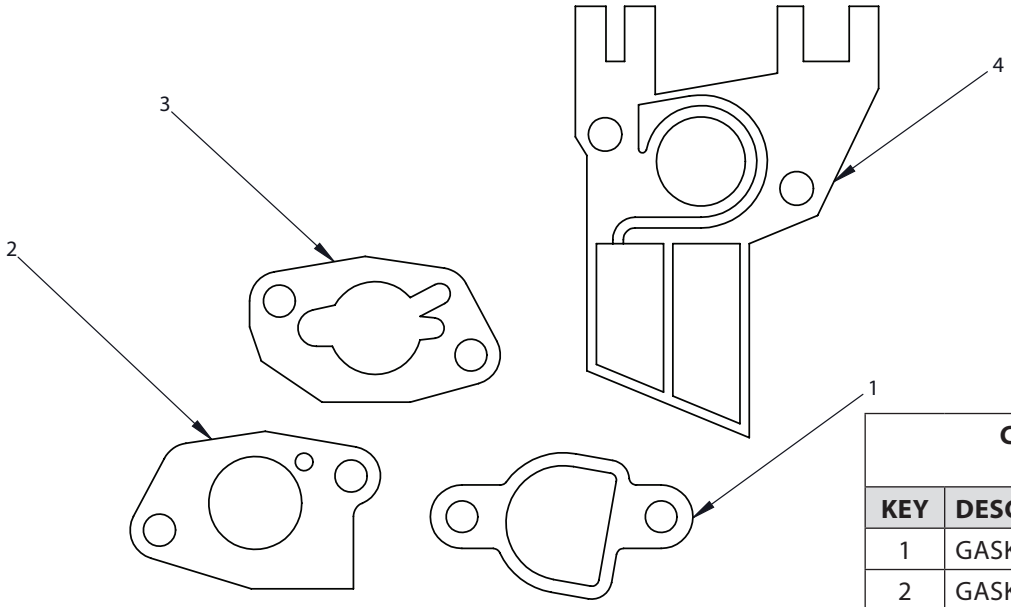
GAS TANK KIT--PART NUMBER 64632		
KEY	**DESCRIPTION**	**QTY.**
1	TANK FUEL	1
2	FILTER FUEL TANK	1
3	TANK CAP	1
4	FUEL TANK SHOCK PAD	2

MUFFLER PARTS EXPLOSION AND LIST



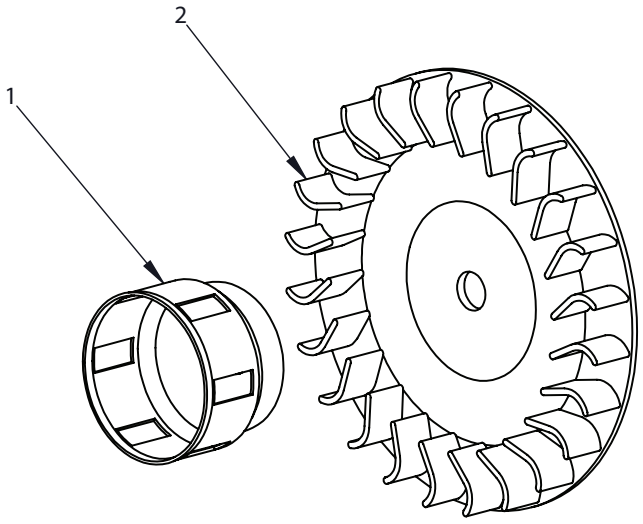
MUFFLER KIT--PART NUMBER 64686		
KEY	**DESCRIPTION**	**QTY.**
1	MUFFLER BODY	1
2	MUFFLER COVER	1
3	GASKET EXHAUST	1
4	BOLT M5 X .75 X 12 PPHMS ZN	4
5	NUT M8 X 1.25 H GR8.8ZN	2

CARBURETOR GASKET KIT PARTS EXPLOSION AND LIST



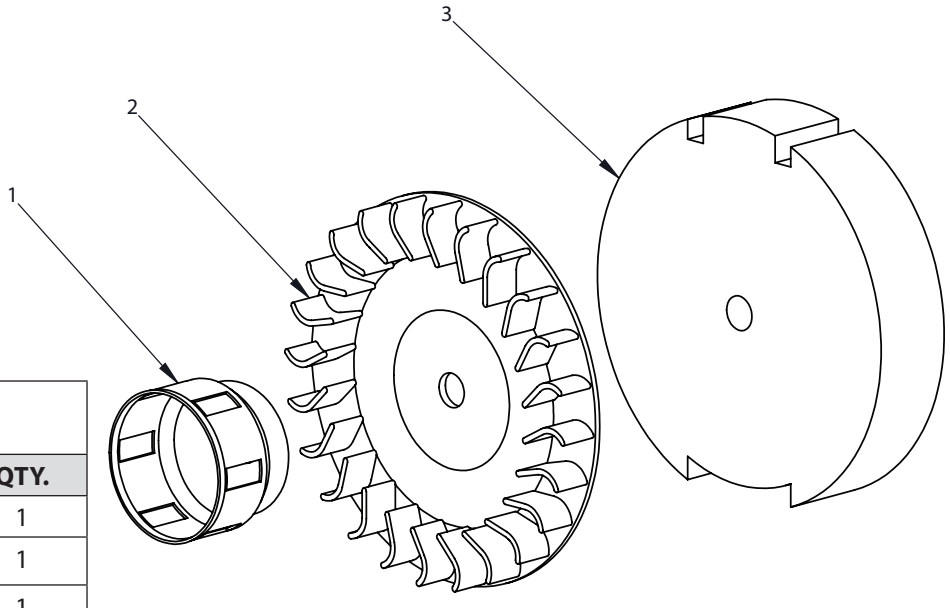
CARBURETOR GASKET KIT PART NUMBER 64781		
KEY	**DESCRIPTION**	**QTY.**
1	GASKET INLET	1
2	GASKET CARBURETOR	1
3	GASKET AIR CLEANER	1
4	HEAT SHIELD CARBURETOR	1

STARTER CUP AND FAN KIT PARTS EXPLOSION AND PARTS LIST



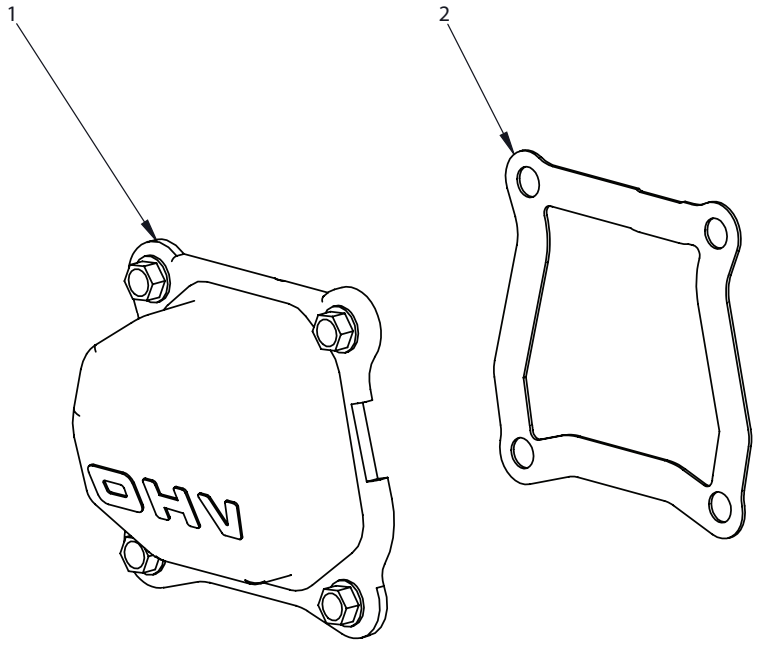
STARTER CUP AND FAN KIT--PART NUMBER 64791		
KEY	**DESCRIPTION**	**QTY.**
1	CUP STARTER	1
2	FAN FLYWHEEL	1

FLYWHEEL KIT PARTS EXPLOSION AND PARTS LIST



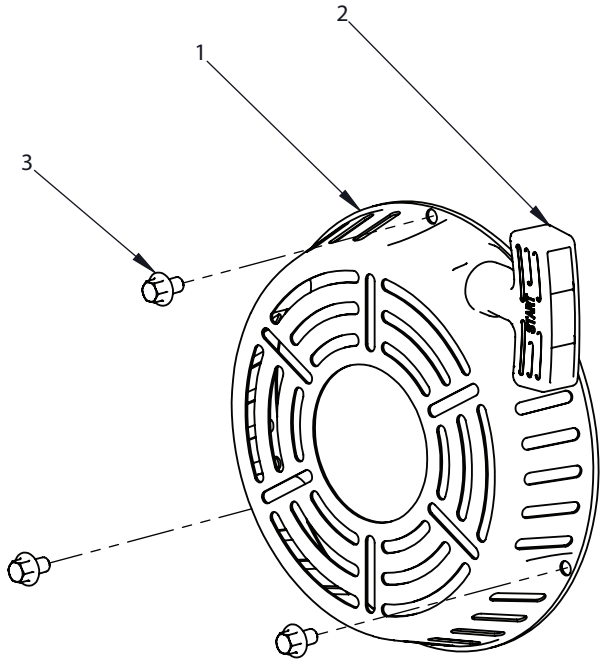
FLYWHEEL KIT PART NUMBER 64792		
KEY	**DESCRIPTION**	**QTY.**
1	CUP STARTING	1
2	FAN FLYWHEEL	1
3	FLYWHEEL	1

OVERHEAD VALVE KIT EXPLOSION AND PARTS LIST



OVERHEAD VALVE KIT PART NUMBER 64795		
KEY	**DESCRIPTION**	**QTY.**
1	COVER VALVE	1
2	GASKET OHV	1

RECOIL KIT PARTS EXPLOSION AND PARTS LIST



RECOIL KIT--PART NUMBER 913446		
KEY	**DESCRIPTION**	**QTY.**
1	RECOIL	1
2	HANDLE RECOIL	1
3	BOLT M6 X 1.0 X 8 HHFCS GR8.8 YLZN	3

196CC VIPER ENGINE

WARRANTY TERMS AND CONDITIONS

PRODUCT WARRANTY: 2-YEAR LIMITED WARRANTY

Ardisam, Inc., Manufacturing Company warrants its Viper® Engines under a two-year limited 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. As a Viper® small engine owner, you are responsible for executing proper maintenance listed in your Operating and Maintenance Instructions. The warranty period begins on the date of purchase by the first retail consumer or commercial end user, and continues for the period of time stated above.

This warranty applies 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 non-authorized service centers. This warranty supersedes all other warranties either expressed or implied and all other obligations or liabilities on our part. Ardisam, does not assume, and does not authorize any other person to assume for us, any liability in connection with the sale of our products. **To be at "No Charge," however, warranty work must be sent directly to Ardisam, Inc., or one of our authorized service centers and performed by them.**

To obtain warranty service and replacement instructions, you must contact our customer service department for warranty authorization. If you choose to ship your product to Ardisam for warranty repair, you must first have prior approval from Ardisam by calling our 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 their discretion, any defective part which falls under the conditions stated above. Ardisam retains the right to change models, specifications and price without notice.

EXPLANATION OF EMISSIONS CONTROL WARRANTY PROVISIONS

Viper® Engines are designed, built and equipped to meet all EPA requirements. It warrants that it is free from defects in material and workmanship that could cause failure to the warranted part; and that it is identical in all material respects to the engine described in the manufacturer's application for certification. When a warrantable condition exists, Ardisam will repair your engine at no cost to you, including parts and labor. The engine emissions label will indicate certification information. If the purchaser is in need of a warrantable repair and is not within 100 miles distance from an Viper® authorized repair center, Viper® will pay for shipping costs to and from an authorized Viper® repair center.

Listed below are the parts covered by the emissions control systems warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part. Coverage under this warranty includes only the parts listed below (the emission and evaporation control systems) if so equipped:

- Air Filter Assembly (only to the first scheduled replacement point)
- Fuel Filter (only to the first scheduled replacement point)
- Carburetor
- Fuel Lines, Fuel Line Fittings and Clamps
- Fuel Metering Valve (if equipped)
- Evaporative System (if equipped)
  - Canister (if equipped)
  - Canister filter (if equipped)
  - Vapor hose (if equipped)
  - Orifice connector (if equipped)
  -Fuel tank
  -Fuel cap
  -Primer bulb canister (if equipped)
- Spark Plugs
- Magneto Ignition System
- Muffler Assembly

LIMITATIONS

The Emission Control Systems Warranty shall not cover any of the following:

a) Repair or replacement required because of misuse or neglect, improper maintenance, repairs improperly performed or replacements not conforming to Ardisam specifications that adversely affect performance and/or durability and alterations or modifications not recommended or approved in writing by Ardisam.

b) Replacement of parts and other services and adjustments necessary for required maintenance at or after the first scheduled replacement point;

c) Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.

d) Diagnosis and inspection fees that do not result in eligible warranty service being performed; and

e) Any add-on or modified part, or malfunction of authorized parts due to the use of add-on or modified parts.

These items will be covered for a period of **two years** from the date of the original purchase. Ardisam warrants that: the components are designed, built and equipped so as to conform with all applicable regulations adopted by the EPA; that they are free from defects in material and workmanship that could cause failure to the engine or other; and that the components used are identical in all material respects to the engine described in the manufacturer's application for certification. The warranty period begins on the date the engine is originally purchased.

MAINTENANCE AND REPAIR REQUIREMENTS

The owner is responsible for the proper use and maintenance of the engine. Viper® recommends that all receipts and records covering the performance of regular maintenance be retained in case questions arise. If the engine is resold during the warranty period, the maintenance records should be transferred to each subsequent owner. Ardisam reserves the right to deny warranty coverage if the engine has not been properly maintained; however, Ardisam may not deny warranty repairs solely because of the lack of repair maintenance or failure to keep maintenance records.

Normal maintenance replacement or repair of emission control devices and systems may be performed by any repair establishment or individuals; however, warranty repairs must be performed by an Viper® authorized service center. Any replacement parts or service that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of the engine manufacturer.

The warranty on emissions-related parts is as follows:

- Any warranted part that is not scheduled for replacement as required maintenance in the owner's manual supplied, is warranted for the warranty period stated above. If any such part fails during the period of warranty coverage, that part will be repaired or replaced at no charge to the owner. Any such part repaired or replaced under the warranty will be warranted for the remaining warranty period.
- Any warranted part that is scheduled only for regular inspection in the owner's manual supplied, is warranted for the warranty period. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
- Any warranted part that is scheduled for replacement as required maintenance in the owner's manual supplied, is 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 will be repaired or replaced at no charge to the owner. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.
- 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 by the owner will be grounds for disallowing a warranty claim. The manufacturer will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add on or modified part.

Viper® Engines, Division of Ardisam, Inc.

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Cumberland, WI 54829

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E-mail: info@ardisam.com

All weights, specifications and features are approximate and are subject to change without notice. Due to continuous product improvements, product images may not be exact. Items used for props not included. Some assembly may be required.