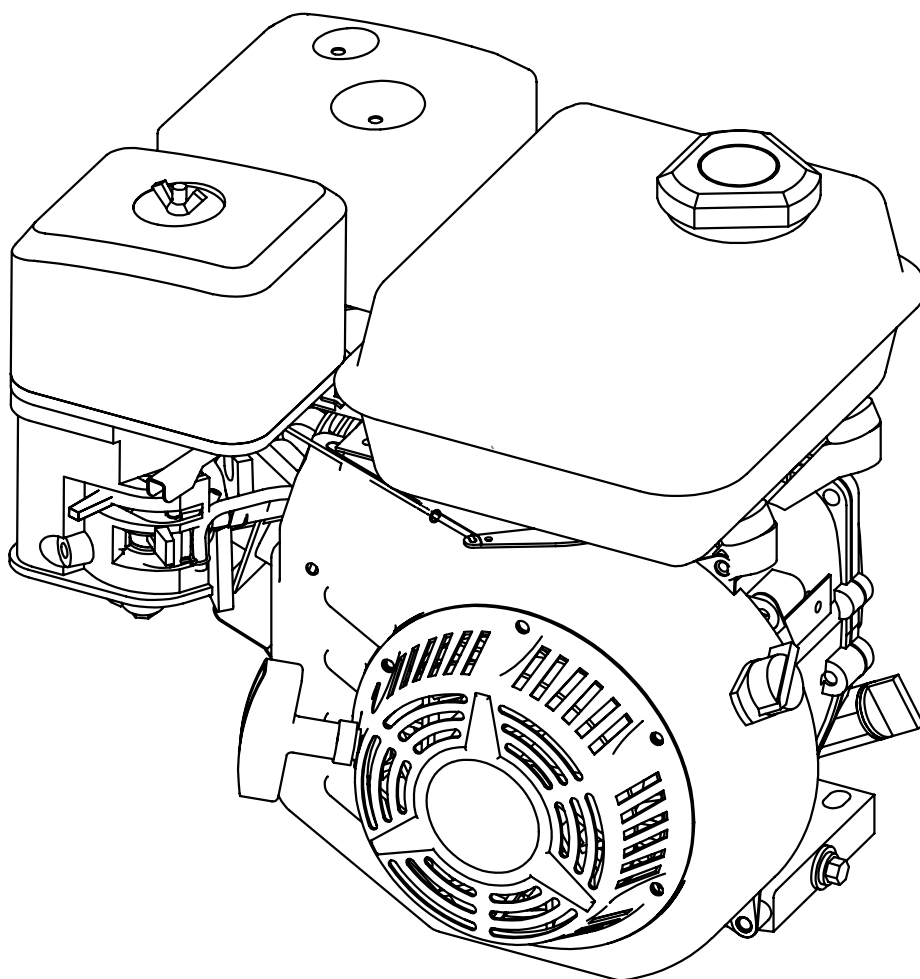




Original Operating
Instructions
31338/E
Viper 196cc
4-Cycle Engine





INTRODUCTION

Thank You . . .

for purchasing a Viper engine from Ardisam, Inc. We have worked to ensure that our product meets high standards for usability and durability. With proper care, your engine will provide many years of excellent service. Please take the time to read this manual carefully to learn how to correctly operate and maintain your Viper engine. Due to continuous efforts to perfect our products, certain procedures and specifications are subjected to change without notice. Congratulations on your investment in quality.

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FEDERAL EMISSION INFORMATION

Ardisam, Inc. 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).

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.



OPERATING AND MAINTENANCE INSTRUCTIONS

196cc 4-Cycle Engine



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 an Ardisam 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, contact our customer service department at 800-345-6007 Monday through Friday from 8 a.m. to 5 p.m. or visit www.ardisam.com. 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.



Viper Engines, A Division of Ardisam, Inc.
1160 Eighth Avenue; P.O. Box 666
Cumberland, Wisconsin 54829
800-345-6007 · Fax (715) 822-2223
E-mail: info@ardisam.com
www.ardisam.com

REGISTRATION, SERVICE AND MAINTENANCE LOG

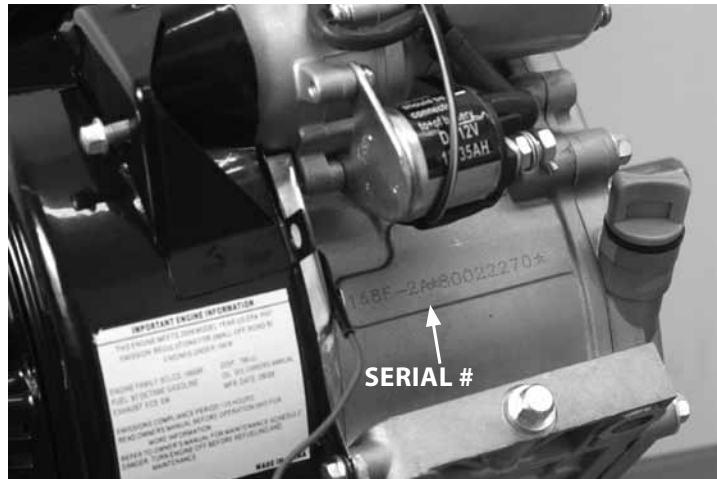
Record the model number and serial number in the space provided for easy reference. Fill out and mail the registration card located in the parts packet or register online at www.ardisam.com. The Engine Serial Number is located under the fuel tank. Warranty is valid only if your completed registration card is received by Ardisam, Inc., at time of purchase.

OWNERSHIP RECORDS		
Owner's Name:		
Owner's Address:		
City:	State/Province:	Zip Code/Postal Code:
Model Number: 31338 or 31338E	Serial Number:	
Date of Purchase:	Place of Purchase:	
Notes:		



ENGINE IDENTIFICATION

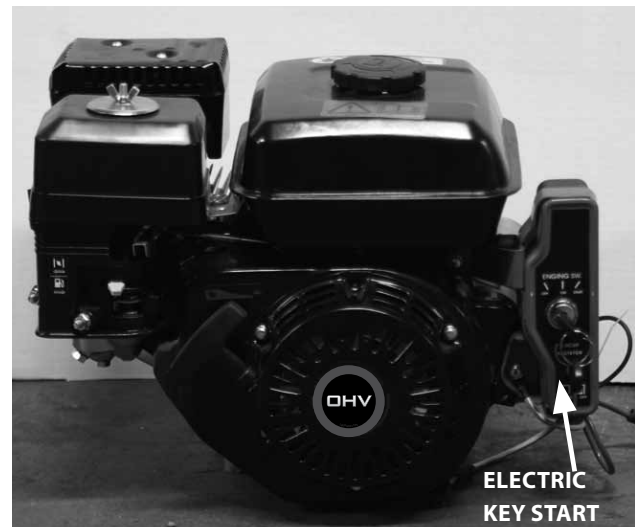
Please use the following illustrations to help determine the serial number of your Viper Engine.



SERIAL #



31338-Manual Start Model



31338E-Electric Start Model



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, Viper 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 Ardisam authorized repair center, Ardisam will pay for shipping costs to and from an authorized Ardisam 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, Inc. specifications that adversely affect performance and/or durability and alterations or modifications not recommended or approved in writing by Ardisam, Inc.
- 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. Viper 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. Ardisam, Inc. 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, Inc. reserves the right to deny warranty coverage if the engine has not been properly maintained; however, Ardisam, Inc. 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 Ardisam 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 nonexempted 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 nonexempted add on or modified part.



SPECIFICATIONS	
Displacement/Stroke	196 cc; 4-stroke
Ignition Type	Electronic ignition
Cooling System	Forced air cooling
Idling Carburetor Adjust	1700 +/- 150 RPM
Valve Clearance	Cold engine-Intake: 0.15 +/- 0.02 mm; Exhaust: 0.20 +/- 0.02 mm
Maximum Power Output	4.8 KW @ 3600 RPM
Maximum Torque	11-N.M./2500 RPM
Bore and Stroke	68 x 54 mm
Spark Plug Type	BP7ES, BPR7ES (NGK), or ~ 0.7 mm gap Torch F7TC
Gasoline Type	Unleaded
Gasoline Tank Capacity	0.95 gallon (3.6 liters)
Drive Shaft Type	Horizontal, 3/4" straight, (3/16") keyed shaft with ball bearings. Direction: counterclockwise (facing shaft); Length: 2-1/4"; Central thread: 5/16"-24
Start Type	Recoil
Speed	3600 RPM
Oil Capacity and Type	~0.63 quart (0.6 liters); SAE 30 (in freezing weather use 5W30)
Weight	33.8 lbs.
Overall Dimensions	12-3/4" L x 14"W x 10-1/4" H

GENERAL SAFETY PRECAUTIONS

Please read this section carefully. Operate the engine according to the safety instructions and recommendations outlined here and inserted throughout the text. Anyone who uses this engine must read the instructions and be familiar with the controls.

Owner's Responsibility:

It is the owner's responsibility to accurately assemble the engine for safe and effective use.

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

SIGNAL WORDS



A signal word alerts you to potential hazards that could harm you or others. Each signal word is preceded by the safety alert symbol followed by the word **DANGER, WARNING, CAUTION or IMPORTANT.**

Each signal word will make you aware of what the hazard is, what can happen, and what you can do to prevent or decrease injury occurrence.

DANGER

DANGER INDICATES YOU WILL BE KILLED OR SERIOUSLY INJURED IF THE SAFETY INSTRUCTIONS THAT FOLLOW THIS SIGNAL WORD ARE NOT OBEYED.

WARNING

WARNING INDICATES YOU CAN BE KILLED OR SERIOUSLY INJURED IF THE SAFETY INSTRUCTIONS THAT FOLLOW THIS SIGNAL WORD ARE NOT OBEYED.

CAUTION

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

IMPORTANT

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

PRECAUTIONS

**WARNING:**
FUEL FILLING PRECAUTIONS

- FUEL AND FUEL VAPORS ARE HIGHLY FLAMMABLE.
- NEVER FILL GAS TANK INDOORS OR IN A POORLY VENTILATED AREA.
- TURN ENGINE OFF AND LET COOL BEFORE REMOVING GAS CAP.
- DO NOT OVERFILL GAS TANK. IF FUEL SPILLAGE OCCURS, WIPE AWAY CAREFULLY AND ALLOW FUEL TO DRY BEFORE STARTING ENGINE.
- PREVENT FIRE AND EXPLOSION CAUSED BY STATIC ELECTRIC DISCHARGE. USE ONLY NON-METAL, PORTABLE FUEL CONTAINERS APPROVED BY THE UNDERWRITER'S LABORATORY(U.L.) OR THE AMERICAN SOCIETY FOR TESTING & MATERIALS (ASTM).
- NEVER POUR FUEL OUT OF ENGINE GAS TANK.
- NEVER ALLOW CHILDREN TO FILL THE GAS TANK. ADULTS ONLY.
- NEVER ALLOW YOURSELF, OR ANYONE UNDER THE INFLUENCE OF DRUGS OR ALCOHOL, TO FILL GAS TANK.
- GAS CAP MUST BE PROPERLY SECURED BEFORE AND DURING OPERATION.
- REFRAIN FROM SMOKING AND STAY AWAY FROM OPEN FLAMES AND SPARKS WHEN REFUELING.

**WARNING:**
FIRE & BURN PROTECTION

- KEEP ALL SPARKS, SMOKING MATERIALS, AND OPEN FLAMES AWAY FROM ENGINE.
- DO NOT USE ENGINE AROUND DRY BRUSH, CLOTH RAGS, OR OTHER FLAMMABLE MATERIALS.
- BE CAREFUL OF HOT PARTS. THE MUFFLER GUARD AND OTHER PARTS BECOME EXTREMELY HOT DURING AND IMMEDIATELY AFTER USE. HOT PARTS CAN CAUSE SEVERE BURNS.
- ALWAYS KEEP MATERIALS AND DEBRIS CLEAR OF MUFFLER GUARD AND OTHER HOT ENGINE PARTS.
- NEVER OPERATE THE ENGINE WITHOUT THE MUFFLER GUARD IN PLACE.

**WARNING:**
OTHER SAFETY PRECAUTIONS

- STAY AWAY FROM ROTATING PARTS. PLACE PROTECTIVE COVERS OVER ROTATING PARTS.
- DO NOT CARRY OR REMOVE ENGINE WHILE IN OPERATION.
- OPERATE THE ENGINE ONLY ON LEVEL AND STABLE SURFACES.

**WARNING:**
EXHAUST PRECAUTIONS

- DO NOT INHALE EXHAUST FUMES. THEY GIVE OFF CARBON MONOXIDE, AN ODORLESS, COLORLESS, DEADLY GAS.
- USE EXTREME CARE WHEN RUNNING ENGINE NEAR PEOPLE OR ANIMALS. ALWAYS POINT EXHAUST AND MUFFLER IN A SAFE DIRECTION.
- NEVER RUN ENGINE IN AN ENCLOSED OR PARTIALLY ENCLOSED AREA. EXAMPLES INCLUDE: BUILDINGS THAT ARE ENCLOSED ON ONE OR MORE SIDES, CAR PORTS OR BASEMENTS.
- ALWAYS MAKE SURE EXHAUST PIPE IS FREE OF FOREIGN OBJECTS.

**WARNING:**
ENGINE REPAIR PRECAUTIONS

- BEFORE WORKING ON ENGINE, ENGINE SHOULD BE OFF AND COOL.
- ALWAYS DISCONNECT THE SPARK PLUG WIRE FROM THE SPARK PLUG.
- SECURE DISCONNECTED SPARK PLUG WIRE AWAY FROM SPARK PLUG AND ANY METAL OBJECTS TO AVOID ARCING (HAZARDOUS UNINTENTIONAL CONNECTION).
- CHECK ALL PARTS THAT WERE REPAIRED OR REMOVED TO ENSURE SECURE AND PROPER FIT.
- USE ONLY ORIGINAL VIPER EQUIPMENT AND PARTS.

ENGINE COMPONENTS

MODEL 31338, 31338E 196CC HORIZONTAL SHAFT

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

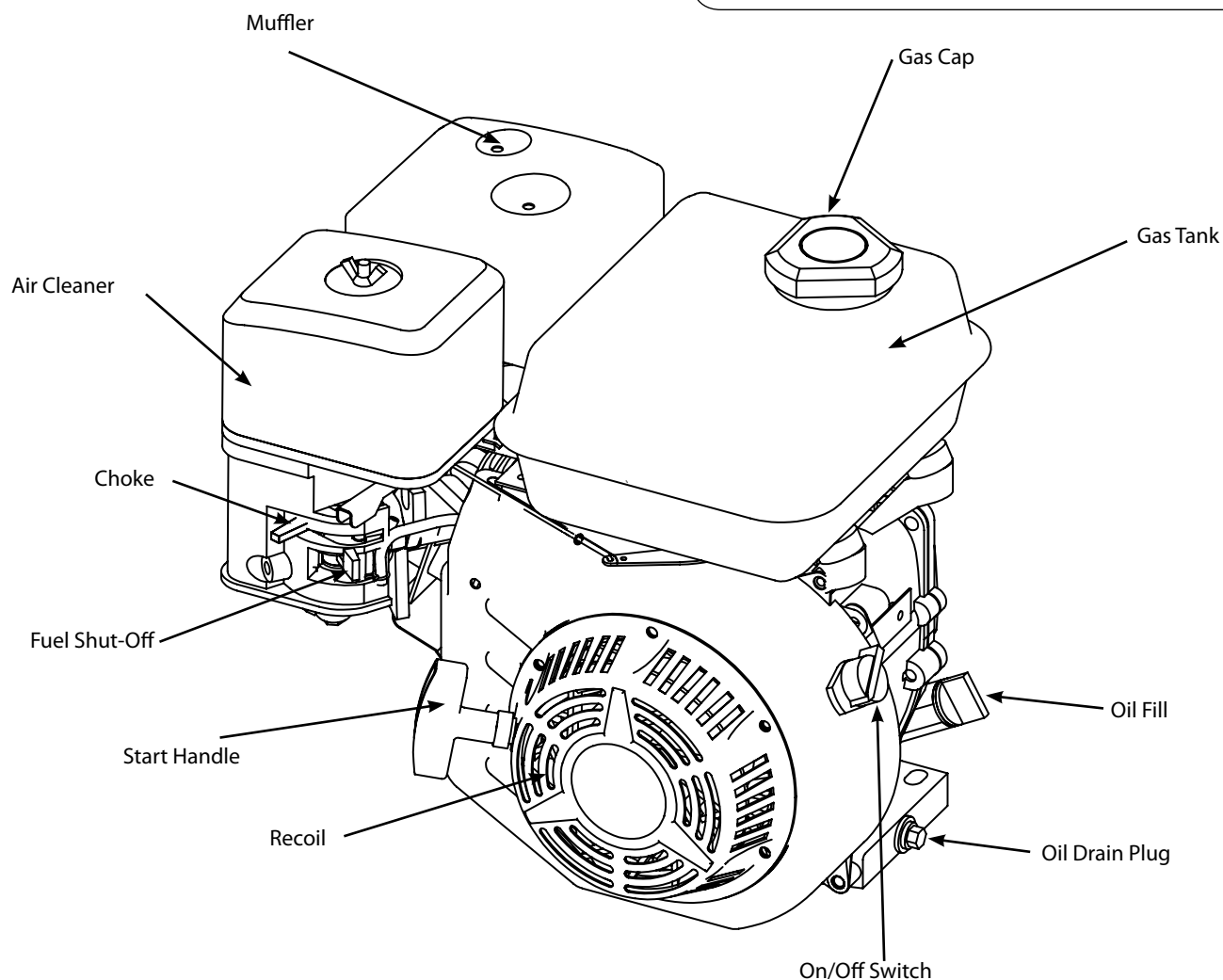
⚠ WARNING

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.



PRE-OPERATION PROCEDURES

PRE-OPERATION INSPECTION

1. Examine underneath and around engine for signs of oil or fuel leaks.
2. Inspect fuel hoses and connections for tightness and fuel seepage.
3. Look for signs of engine damage.
4. Check that all guards and shields are in place, and all screws, nuts and bolts are tightened.
5. Eliminate excessive debris around muffler and recoil starter.
6. Be sure air filter is clean and free of debris.
(Reference image on page 9.)

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.

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 OUT-DOORS TO FILL TANK.

IMPORTANT

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

CHECKING & ADDING OIL

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

1. Clean around oil fill area. **SEE FIGURE 1.**
2. Slide out 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 top thread of the oil fill hole, refill to upper level. **SEE FIGURE 3(a) & 3(b).**
6. Change oil if contaminated. (**See Chapter 5 Under "LUBRICATION"**)

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.

CHECKING & FILLING GAS TANK

Be sure the engine is located on a level surface before checking or refilling oil. Use unleaded regular, unleaded premium automotive fuels only. Fuel may contain up to 10% ethanol. **DO NOT mix oil with fuel.**

1. Make sure engine is cool and not operating while filling.
 2. Remove gas cap.
- 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.

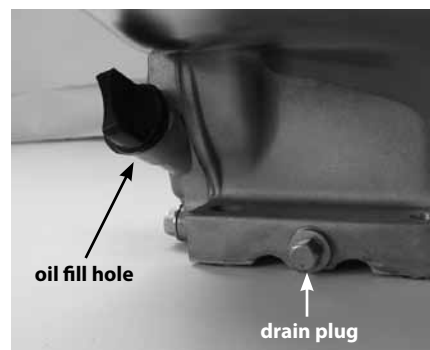


FIGURE 1



FIGURE 2

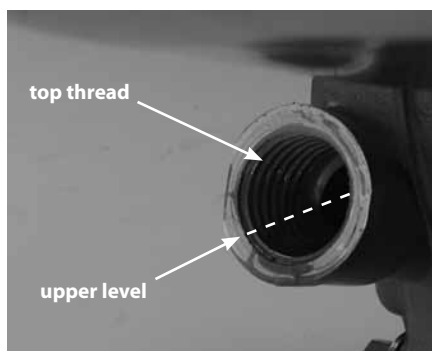


FIGURE 3(a)



FIGURE 3(b)

ENGINE OPERATION

REVIEW SECTION "PRE-OPERATION INSPECTION" BEFORE STARTING ENGINE.

STARTING & STOPPING 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 gas cap to ensure proper air flow.
4. **Choke:**
 - "Full choke" position is established by moving the choke lever as far left to the **CHOKE** position as possible. **SEE FIGURE 5.**
 - "Half choke" position is established when the choke lever is maneuvered half-way between **CHOKE** and **RUN** positions. **SEE FIGURE 6.**

First Start & Cold Start: Move choke lever to "full choke." **SEE FIGURE 5.**

Warm Start: "No choke" or "half choke" is needed. **SEE FIGURE 7.**

WARNING

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

NEVER LEAVE ENGINE RUNNING WHILE UNATTENDED.

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.**

CAUTION

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



FIGURE 5

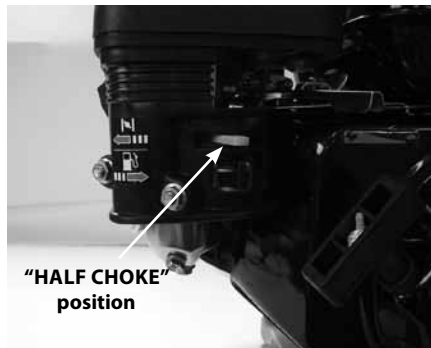


FIGURE 6

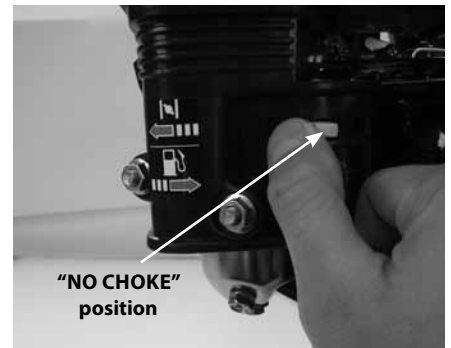


FIGURE 7

OPERATING AND MAINTENANCE INSTRUCTIONS

196cc 4-Cycle Engine



5. Grasp starter handle and pull out slowly, until resistance is felt. Without letting it retract, pull rope with a rapid full arm stroke. Let it return to its original position very slowly. Repeat this step each time the starter rope is pulled. **SEE FIGURE 8.**
6. Pull recoil until engine fires or runs.
7. After engine begins operating, move choke lever to **"half choke."** **SEE FIGURE 6.**
8. Run engine for 30 to 45 seconds at **"half choke"** position until engine warms up.
9. Move choke lever to **"no choke"** position and move throttle to desired speed. **SEE FIGURE 7.**

ELECTRIC START ENGINE

1. Repeat steps 1-4 under **"MANUAL START ENGINE"** heading on previous page.
2. Insert key and turn to start. **SEE FIGURE 9.**
3. After engine starts running, move choke lever to **"half choke."** **SEE FIGURE 6.**
4. Run engine for 30 to 45 seconds at **"half choke"** position until engine warms up.
5. Move choke lever to **"no choke"** position and move throttle to desired speed. **SEE FIGURE 7.**
6. To stop, turn key to **OFF** position. **SEE FIGURE 10.**

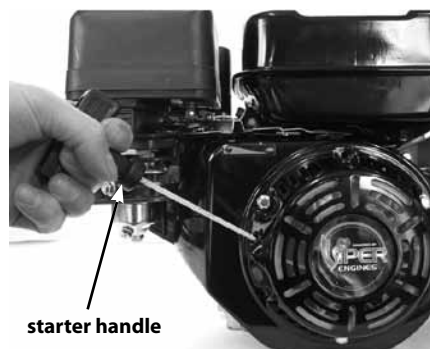


FIGURE 8



FIGURE 9

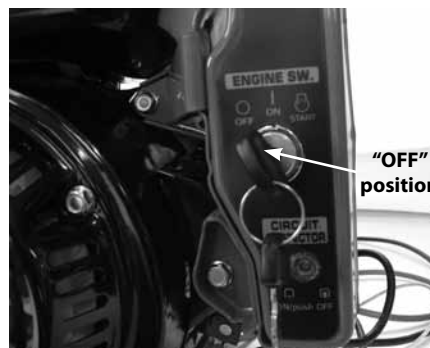


FIGURE 10

MAINTENANCE

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.

⚠ 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 seasonally	Every 100 hours or seasonally	Yearly
Clean Engine and Check Bolts & Nuts		X			
Engine Oil (See Lubrication section)	Check	X			
	Change *	(initial 5 hours)	X		
Oil in Gear Reduction (if equipped)	Change		X		
Air Filter (See Air Filter section)	Check	X		X	
	Clean **		X		
	Replace		X		X
Spark Plug (Gap .030") (See Spark Plug section)	Check-Adjust		X		
	Replace				X
Fuel Filter (See Fuel Filter section)	Clean ***		X		
	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

LUBRICATION

Choose engine oil that meets or surpasses the latest API service classification. 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.

NOTE: 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 11.**
2. Remove oil drain plug and empty oil into suitable oil container. Dispose of oil properly. **SEE FIGURE 1.**
3. Reinstall drain plug. Remove dipstick (if applicable) or oil fill cap. **SEE FIGURE 2.**
4. Fill with appropriate oil to **"FULL"** or top line of dipstick; otherwise to top thread of oil fill hole. **SEE FIGURE 3(a) & 3(b).**
5. Reinsert dipstick or oil fill cap and tighten.

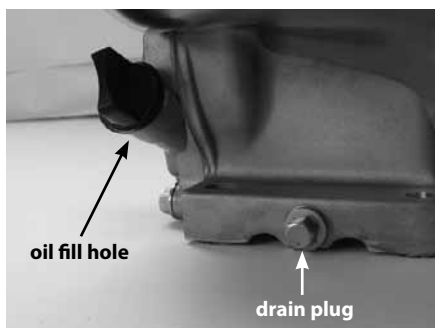


FIGURE 1

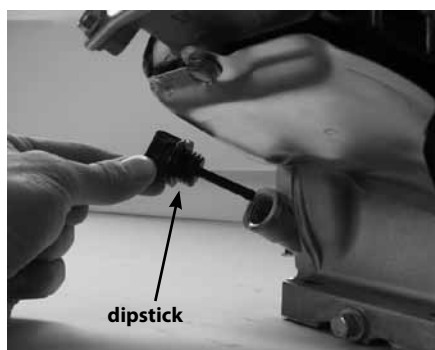


FIGURE 2

⚠ 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.

OIL IS HAZARDOUS WASTE

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

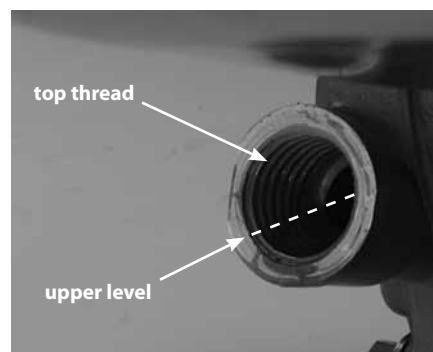


FIGURE 3(a)



FIGURE 3(b)

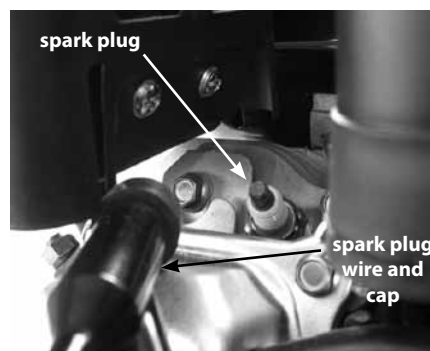


FIGURE 11

AIR FILTER

- 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 12.**
- Service air filter every 3 months or after 20 hours of operation. Clean filter daily in extremely dusty conditions.

REMOVING/INSTALLING AIR FILTER

1. Loosen wing nut and remove air cleaner cover by rotating to the left towards spark plug. **SEE FIGURE 12.**

NOTE: Remove with care to prevent damage to choke lever.

2. Remove the air filter. **SEE FIGURE 13.**
3. Replace foam pre-cleaner and reinstall new or clean air filter inside cover.
4. Place cover's tabs into slots in bottom of base.
5. Replace cover and tighten wing nut. **SEE FIGURE 14.**

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.
4. Attach the filter and air cleaner cover to the engine.

SPARK PLUG

The recommended spark plug is a Torch F7RTC which cross references to an AC Delco R42CXL5 or Champion RN7YC.

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. **SEE FIGURE 11 ON PAGE 15.**
 - Reinstall original spark plug, tighten additional 1/2 turn.
 - Installing new spark plug, adjust spark plug gap to .030" 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 GAS TANK.



FIGURE 12

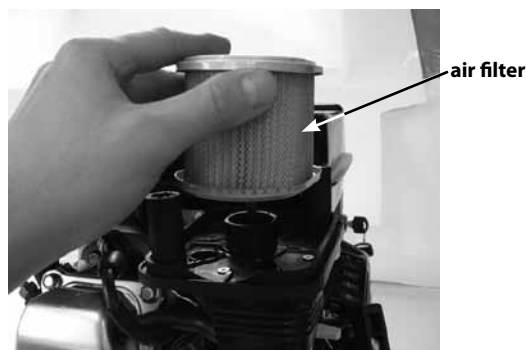


FIGURE 13

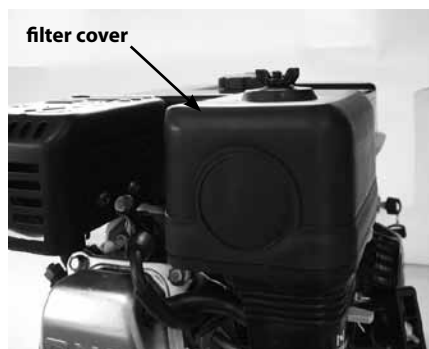


FIGURE 14

CARBURETOR

- Never tamper with factory setting of the carburetor.
- Contact your service provider or Ardisam, Inc. 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 14(a) & 14(b).**
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.

! 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**

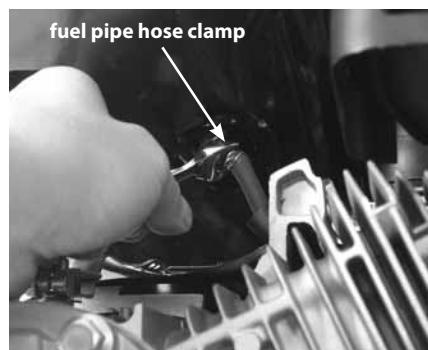


FIGURE 14(a)

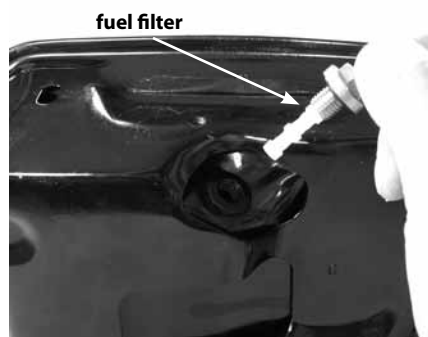


FIGURE 14(b)

TRANSPORTING AND STORAGE

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 16.**
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 gas tank remove fuel or transport with an open vehicle in an upright position.
4. If an enclosed vehicle must be used, remove gas 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 gas 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

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 gas 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.

CAUTION

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 16

SERVICE AND TROUBLESHOOTING

SERVICE INFORMATION

At Ardisam, we build quality and durability into the design of our products. Nevertheless, no amount of careful design by us, or thorough maintenance by you, can guarantee a repair-free life for your engine. Most repairs will be minor and easily fixed by following the suggestions in the troubleshooting guide of 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 mechanic or Ardisam, Inc. (contact your retailer for a list of authorized mechanics in your area). A parts catalog is included in this section. We will always be glad to answer any questions you encounter or find suitable assistance to meet your needs. To order parts or inquire about our warranty call, write or browse our website at the address found below under the section "ordering repair parts."

ORDERING REPAIR PARTS

Parts can be obtained from the store where your engine was purchased or direct from the factory. To order from the factory, call or write to:

Ardisam, Inc.
1160 Eighth Avenue, Cumberland, WI 54829
Phone (715) 822-2415 Fax (715) 822-4180
1-800-345-6007
Email: info@ardisam.com
www.ardisam.com

Please include the following information with your order:

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

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**

PROBLEM	POSSIBLE CAUSE	REMEDY/ACTION
Engine will not start Electric 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. 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. Use gas stabilizer at end of season
	2. Spark plug wire loose	2. Make sure spark wire is securely attached to spark plug
	3. Dirty carburetor	3. Clean carburetor, use gas stabilizer, new gas can
Engine misses or lacks power	1. Clogged gas tank	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. Gas cap not venting	1. Replace fuel cap

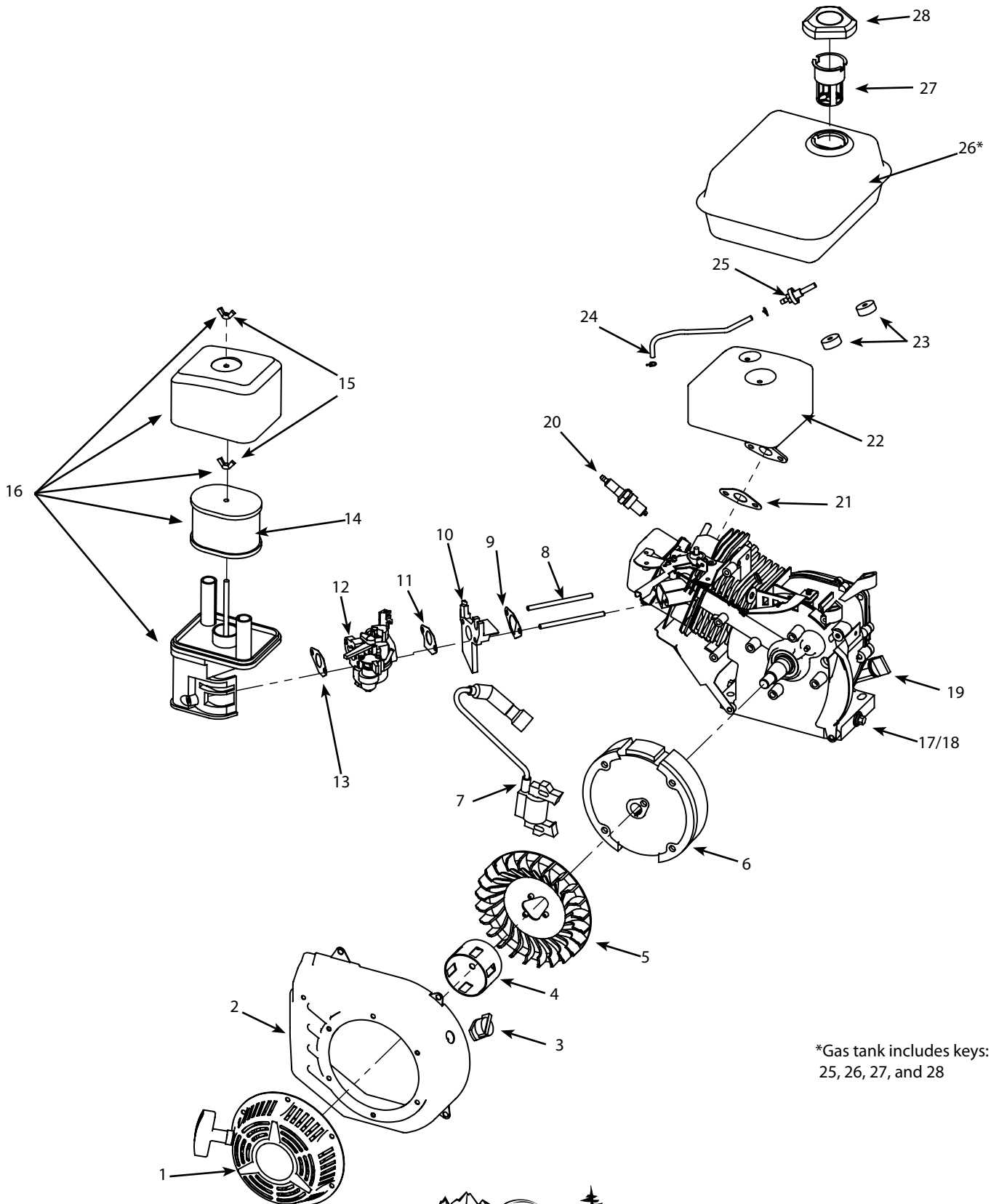
Contact a service provider if above remedies fail.



OPERATING AND MAINTENANCE INSTRUCTIONS

196cc 4-Cycle Engine

196cc VIPER ENGINE PARTS EXPLOSION

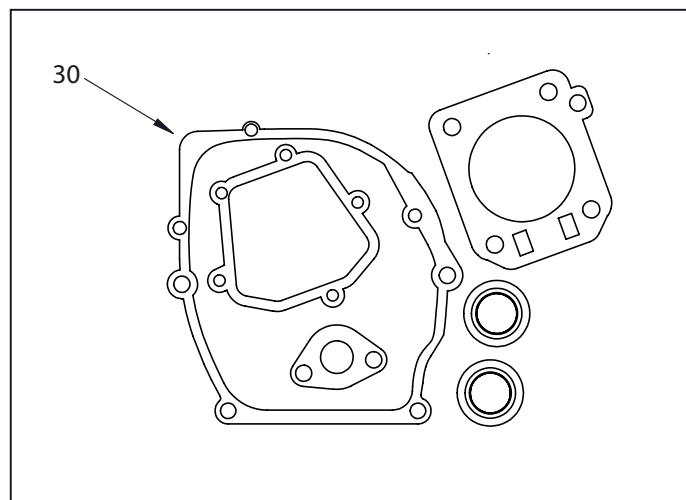
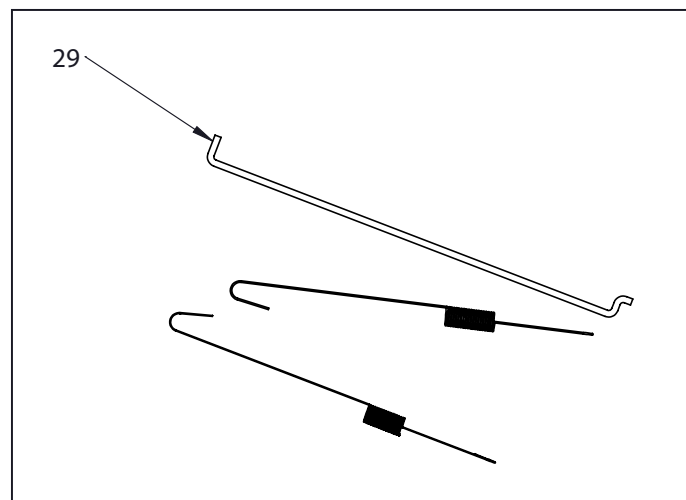


*Gas tank includes keys:
25, 26, 27, and 28

196cc VIPER ENGINE PARTS LIST

REF NO.	PART NO.	DESCRIPTION	QTY.
1	913446	RECOIL STARTER ASSEMBLY (INCLUDES PULL-START HANDLE)	1
2	64237	FAN HOOD ASSEMBLY	1
3	913435	ENGINE SWITCH	1
4	64275	STARTER CUP	1
5	64276	FAN, FLYWHEEL	1
6	64277***	FLYWHEEL, MANUAL START	1
--	64782***	FLYWHEEL, ELECTRIC START	1
7	64684	IGNITION COIL ASSEMBLY	1
8	64207	STUD BOLT, M6 X 113	2
9	64305*	GASKET, INLET	1
10	64306	CONNECTING BLOCK	1
11	64307*	GASKET, CARBURETOR	1
12	64308	CARBURETOR ASSEMBLY	1
13	64309*	GASKET, AIR CLEANER	1
14	64280	AIR FILTER ELEMENT	1
15	64278	WING NUT	2
16	64685	AIR CLEANER KIT	1
17	64157	WASHER	2
18	64156	OIL DRAIN PLUG	2
19	913328	DIPSTICK ASSEMBLY	2
20	64212	SPARK PLUG	1
21	64294**	GASKET, EXHAUST	1
22	64686	MUFFLER KIT	1
23	913420	FUEL TANK SHOCK PAD	2
24	64296	FUEL LINE ASSEMBLY	1
25	64144	FUEL FILTER	1
26	64304	GAS TANK	1
27	64147	FUEL STRAINER CUP	1
28	6327	GAS CAP W/PACKING RING	1
29	64780	GOVERNOR SPRING KIT	1
30	64779	ENGINE GASKET KIT	1

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.



* These parts are only available as the carburetor gasket kit (P/N 64781).

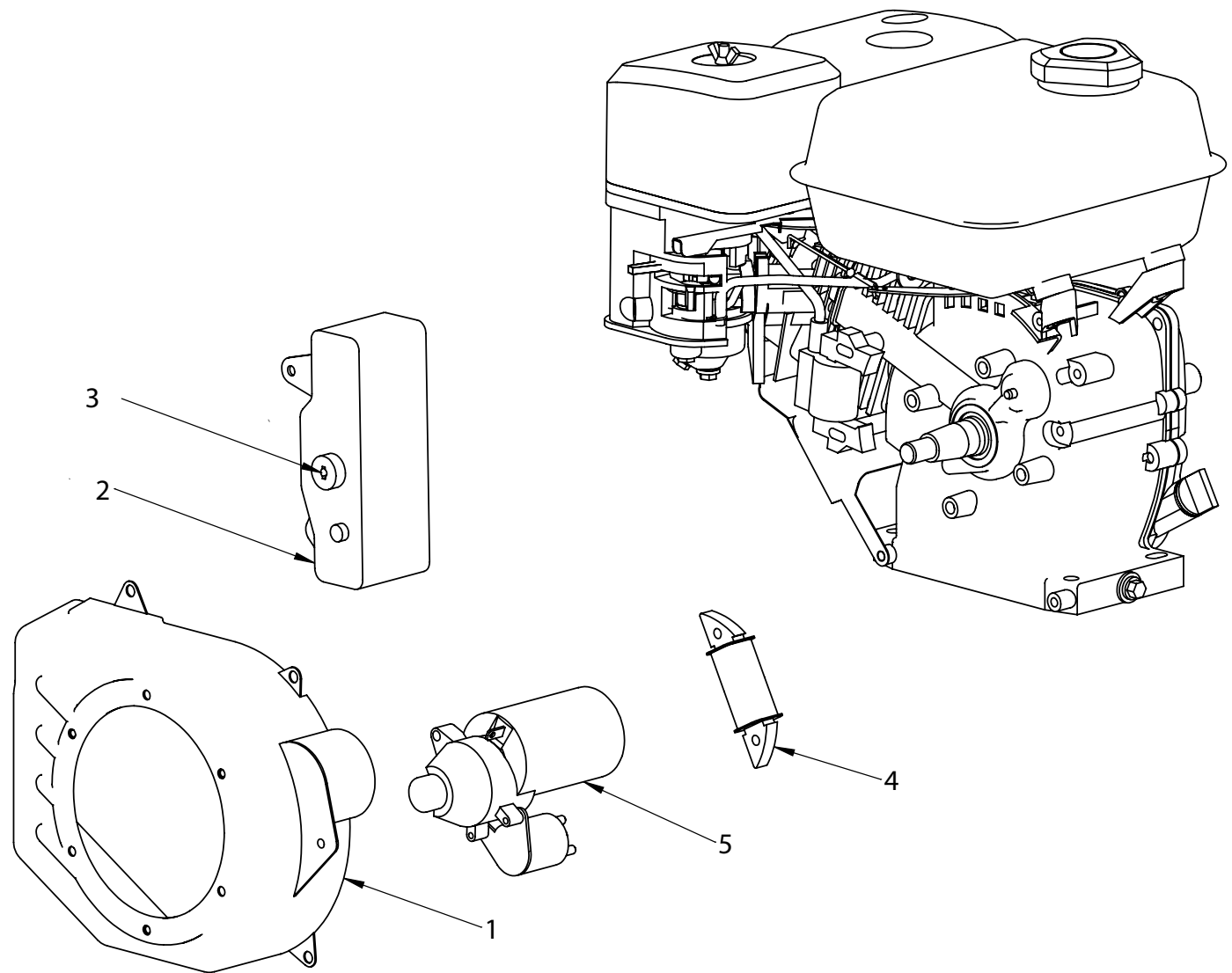
** This part only available in the engine gasket kit (P/N 64779).

*** Ask customer service for assistance when choosing flywheel.

OPERATING AND MAINTENANCE INSTRUCTIONS

196cc 4-Cycle Engine

196cc ELECTRIC START PARTS EXPLOSION



REF NO.	PART NO.	DESCRIPTION	QTY.
1	913164	BLOWER HOUSING ELECTRIC START	1
2	913165	KEY SWITCH ASSEMBLY	1
3	46139	IGNITION KEY (NOT SHOWN)	1
4	913475	CHARGING COIL	1
5	913482	STARTER MOTOR ASSEMBLY	1

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.



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