

Operator's Manual

TV085XA (AV520)

Two-Cycle Engine • Vertical Crankshaft • Air-Cooled

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Visit our web site at www.TecumsehPower.com

- ◆ Register Your TecumsehPower Engine
 - ◆ Maintenance Tips
 - ◆ On-Line Store
 - ◆ Locate your nearest TecumsehPower Servicing Dealer
- LOG ON!*

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(English) 6/01/08

IMPORTANT NOTICE!

Safety Definitions

Statements in this manual preceded by the following words and graphics are of special significance:

WARNING

Or

WARNING

WARNING indicates a potentially hazardous situation which if NOT avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if NOT avoided, may result in minor or moderate injury.

CAUTION

Indicates a potential situation which, if NOT avoided, could result in equipment or property damage.

NOTE

Refers to important information and is placed in italic type.

It is recommended that you take special notice of all items discussed on the next two pages and wear the appropriate safety equipment.

Before operating this engine *it is your responsibility* to read this Operator's Manual. Follow these basic rules for your personal safety:

- Keep this manual handy at all times for future reference.
- Read it carefully and familiarize yourself with operating, maintenance, components and safety instructions.

Notice Regarding Emissions

NOTE

Engines which are certified to comply with California and U.S. EPA emission regulations for SORE (Small Off Road Equipment), are certified to operate on regular unleaded gasoline, and may include the following emission control systems: (EM) Engine Modification and (TWC) Three-Way Catalyst (if so equipped.)

TecumsehPower Contact Information

For engine adjustments, repairs or warranty service NOT covered in this manual, contact your nearest Authorized TecumsehPower Servicing Dealer. Find them on our website at www.TecumsehPower.com or call TecumsehPower Company at 1-800-558-5402 for additional information.

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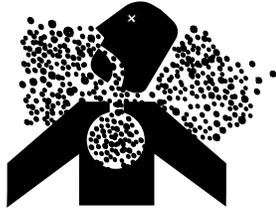
I. General Safety Precautions

⚠ WARNING

Read equipment manufacturer's manual and this material thoroughly before using this engine. Failure to do so can result in serious injury or death. Consult your local Authorized TecumsehPower Servicing Dealer, call 1-800-558-5402, or go to www.TecumsehPower.com for additional information.

A. Avoid Carbon Monoxide Poisoning

All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion and eventually death.



Carbon monoxide is a colorless, odorless, tasteless gas which may be present even if you DO NOT see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly and you can quickly be overcome and unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly-ventilated areas. If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air, and SEEK MEDICAL TREATMENT.

To prevent serious injury or death from carbon monoxide:

- NEVER run engine indoors. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
- NEVER run engine in poorly-ventilated or partially enclosed areas such as barns, garages, basements, carports, under dwellings, or in pits.
- NEVER run engine outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.

B. Avoid Gasoline Fires

Gasoline (fuel) vapors are highly flammable and can explode. Fuel vapors can spread and be ignited by a spark or flame many feet away from engine. To prevent injury or death from fuel fires, follow these instructions:



- NEVER store engine with fuel in fuel tank inside a building with potential sources of ignition such as hot water and space heaters, clothes dryers, electric motors, etc.
- NEVER remove fuel fill cap or add fuel when engine is running.
- NEVER start or operate the engine with the fuel fill cap removed.
- Allow engine to cool before refueling.

- NEVER fill fuel tank indoors. Fill fuel tank outdoors in a well-ventilated area.
- DO NOT smoke while refueling tank.
- Use only an approved red GASOLINE container to store and dispense fuel. TecumsehPower Company recommends purchasing gasoline in containers with a capacity of 2.5 gallons or less. Small containers are easier to handle and help eliminate spillage during refueling.
- DO NOT pour fuel from engine or siphon fuel by mouth. To empty fuel tank see "I. Draining Fuel" instructions on page 13.

C. Adult Supervision of Operation, Refueling and Maintenance

The manufacturer of the equipment may provide information about who is allowed to use this engine (see equipment manufacturer's manual). NOT everyone who is allowed to use this engine is capable of safely and responsibly operating, maintaining and/or fueling it. TecumsehPower Company recommends the following:

- An adult should fuel this engine. NEVER allow children to refuel this engine. See "B. Filling Fuel Tank" instructions on page 4.
- An adult should perform maintenance on this engine. See "VII. Maintenance" instructions on page 8. Only allow children to perform maintenance if an adult has determined they are experienced and capable of such operation.
- An adult should start the engine. See "G. Avoid Accidental Starts" instructions on page 2. Only allow children to start the engine if an adult has determined they are experienced and capable of such operation.
- To avoid unsupervised operation of the engine, especially by children, NEVER leave it unattended when it is running. Remove ignition key, if equipped.

D. Stay Away from Rotating Parts

NEVER operate the engine with an unguarded engine shaft or flywheel.

The equipment manufacturer may attach a sprocket and chain or pulley and belt to the engine shaft. If these parts are NOT properly guarded, or if you are NOT sure whether they are properly guarded, DO NOT use your engine; contact the equipment manufacturer. Hands, feet, hair, jewelry, clothing, etc. can become entangled in rotating parts, leading to serious injury or death. To avoid serious injury or death, be sure the flywheel guard is in place.



E. DO NOT Modify Engine

To avoid serious injury or death, DO NOT modify engine in any way. Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. NEVER tamper with factory setting of engine governor.

⚠ WARNING

Use of this engine on fun-carts, go-karts, or mini-bikes can result in serious injury or death. TecumsehPower Company manufactures the Power Sport line of engines for use in such applications. Consult your local Authorized TecumsehPower Servicing Dealer, call 1-800-558-5402, or visit www.TecumsehPower.com for additional information.

F. Avoid Burns and Fire from Hot Surfaces

The muffler and other engine parts become extremely hot during operation and remain hot after the engine has stopped.



- To avoid severe burns on contact, STAY AWAY from hot areas of engine. DO NOT operate the engine without the muffler guard in place, if equipped.
- To reduce the risk of fire keep all materials that can burn, including grass and leaves, away from muffler and rest of engine. DO NOT operate, idle or park engine powered equipment in long dry grass or other dry ground cover.

G. Avoid Accidental Starts

To prevent accidental starting when working on equipment always:

- Carefully disconnect spark plug wire and keep it away from spark plug. See Figures 1 and 2.
 - Keep the disconnected spark plug wire securely away from metal parts where arcing could occur.
 - Carefully attach the spark plug wire to the grounding post, if provided.
- Disconnect battery at negative terminal first, if engine is equipped with a DC electric starter.
- Turn all engine switches to “OFF” position.
- Remove ignition key, if provided.

H. Use Hearing Protection

Engine noise may cause hearing damage. Always wear hearing protection when operating an engine.

II. How to Get Service

For engine adjustments, repairs or warranty service NOT covered in this manual, contact your nearest Authorized TecumsehPower Servicing Dealer. Find them on our website at www.TecumsehPower.com or call TecumsehPower Company at 1-800-558-5402 for additional information.

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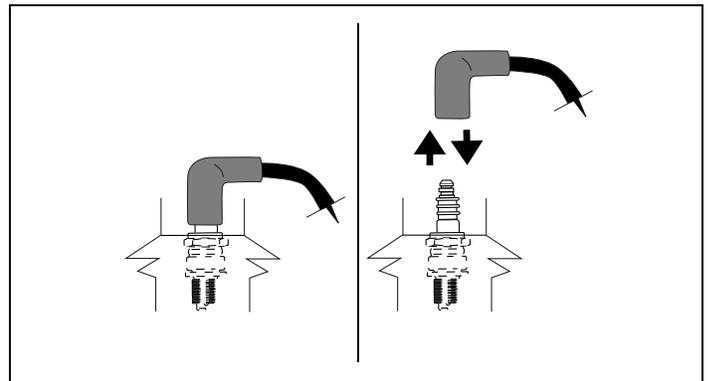


Figure 1. Disconnecting/Connecting Spark Plug

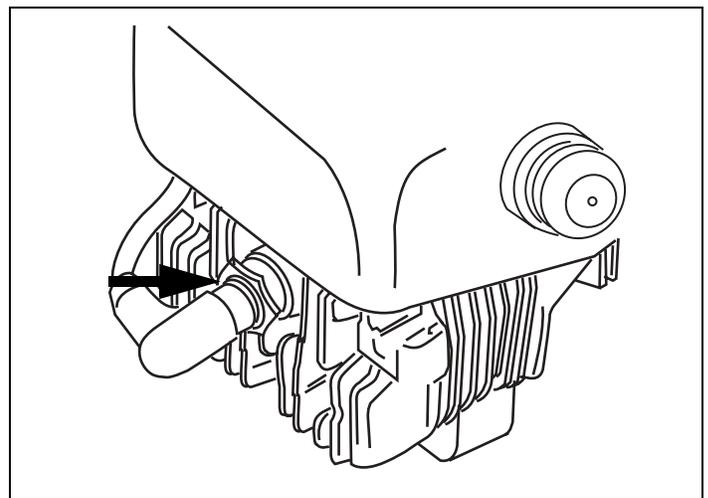


Figure 2. Typical Spark Plug Connection

A. Engine Identification Decal

A sample engine identification decal is located in the next column and indicates the engine's model number, specification and date of manufacture (DOM). See Figure 3.

NOTES

Please look at the decal on your engine.

Fill in the engine information in the spaces provided for future reference.

B. Technician's Handbook

If you have a general understanding of internal combustion engines and wish to repair and service your engine and/or engine emission control systems yourself, a Technician's Handbook is available from your Authorized TecumsehPower Servicing Dealer. See Figure 4. This handbook covers repairs and adjustments not covered within this Operator's Manual, and it is intended for individuals who have had adequate training, experience and who practice proper tool usage. Service procedures should be clearly understood and practiced when servicing TecumsehPower engines.

- Order as part #692508 or #740047 for TV Models.

TecumsehPower Company manufactures and is responsible only for the engine used on this power equipment. If repair or service is needed for anything other than the engine, contact the service source recommended by the equipment manufacturer.

III. Oil and Fuel Specifications

A. Oil

To operate your engine you need to use a clean, high quality, 2-cycle oil mixed with fuel. For recommended mixture ratio of fuel and oil, see Table 1 for ice augers and Table 2 for all other applications. See "A. Mixing Fuel and Oil" instructions on page 4. Afterward, continue reading instructions below.

NOTES

Use of NMMA, TC-WII or TC-W3, JASO FB or JASO FC classified oil is recommended.

Special-formulated oils are available at your Authorized TecumsehPower Servicing Dealer.

B. Fuel

Use unleaded regular, unleaded premium or reformulated automotive fuel only. You may use gasoline containing the components identified in Table 3.

- DO NOT use leaded fuel.
- Fuel must be fresh and clean. NEVER use fuel left over from last season or stored for long periods.
- DO NOT use fuel containing Methanol (Wood Alcohol).

CAUTION

The use of alternative fuels such as E85 or E20 are NOT recommended for use in TecumsehPower engines. Alternative fuels with high alcohol content can cause hard starting, poor engine performance, and may cause internal engine damage.

NOTE

Damage and/or performance problems that occur from use of fuel other than those listed in the Operator's Manuals will not be considered warranty.

Table 1. Fuel Mix Chart Mixture Ratio 40:1 (ice augers)

U.S.		S.I. Metric	
Gas	Oil	Petrol	Oil
1 Gal.	3.2 oz.	4 Liters	100 ml
2 Gal.	6.4 oz.	8 Liters	200 ml
5 Gal.	16 oz.	20 Liters	500 ml

Table 2. Fuel Mix Chart Mixture Ratio 24:1

U.S.		S.I. Metric	
Gas	Oil	Petrol	Oil
1 Gal.	5 oz.	4 Liters	167 ml
2 Gal.	11 oz.	8 Liters	333 ml
5 Gal.	27 oz.	20 Liters	833 ml

Table 3. Recommended Fuel

Fuel Component	Percentage
Ethanol	10%
Grain Alcohol ("Gasohol")	10%
MTBE (Methyl Tertiary Butyl Ether)	15%
ETBE (Ethyl Tertiary Butyl Ether)	15%



WARNING 2083

To avoid injury or death, read the engine operators manual and the equipment owner's manual. Call 1-800-333-6400 for engine identification.

IMPORTANT ENGINE INFORMATION

TECUMSEHPower COMPANY

THIS ENGINE MEETS THE FOLLOWING SPECIFICATIONS FOR 2-CYCLE ENGINES:

FUEL: 2-CYCLE 2-STROKE OIL: SAE 30

MIXING: 24:1 OIL: 2083

SPEC: 2-CYCLE OIL: 2083

ENGINE MODEL: 4700L100100 (2083) 100 cc

ENGINE MODEL: _____

SPEC: _____

DOM: _____

Figure 3. Engine Identification Decal

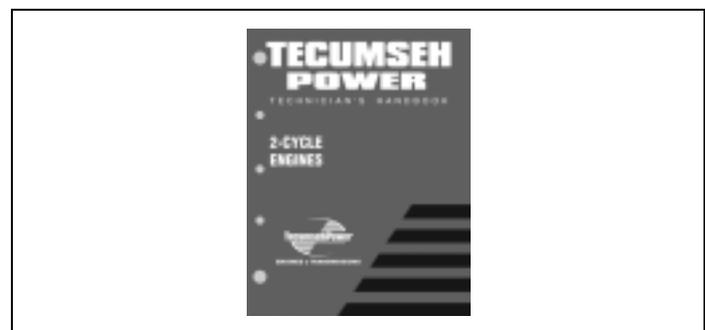


Figure 4. Technician's Handbook

IV. Before Starting Your Engine

A. Mixing Fuel and Oil

WARNING NEVER store engine with fuel in the fuel tank inside a building with potential sources of ignition such as hot water or space heaters, clothes dryers, electric motors, etc. Doing so may lead to an explosion resulting in death or serious injury.

NOTES

DO NOT mix fuel and oil directly in fuel tank.

Use of NMMA, TC-WII or TC-W3, JASO FB or JASO FC classified oil is recommended.

Contact your Authorized TecumsehPower Servicing Dealer for TecumsehPower Oil.

1. Be sure container is outdoors and in a well-ventilated area.
2. Fill approved clean red GASOLINE container with 1/4 of recommended fuel amount. See Tables 1, 2 and 3 on page 3. Afterward, continue reading instructions below.
3. Add required amount of recommended oil to fuel. See Table 1 for ice augers, Table 2 for all other applications on page 3. Afterward, continue reading instructions below.
4. Screw cap onto container.
5. Shake container vigorously.
6. Unscrew cap from container.
7. Fill container with remainder of recommended fuel. See Tables 1, 2 and 3 on page 3. Afterward, continue reading instructions below.
8. Wipe away any spilled fuel or oil.

B. Filling Fuel Tank

WARNING An adult should fuel this engine. NEVER allow children to refuel this engine. Gasoline (fuel) vapors are highly flammable and can explode. Fuel vapors can spread and be ignited by a spark or flame many feet away from engine. To prevent injury or death from fuel fires, follow these instructions:

1. Stop engine and allow it to cool before refueling.
2. Be sure engine is outdoors and in a well-ventilated area.
3. Clean area around fuel fill cap and remove fuel fill cap. See Figure 5.

NOTES

For recommended mixture ratios of fuel and oil, see Tables 1, 2 and 3 on page 3. See "A. Mixing Fuel and Oil" instructions above. Afterward, continue reading instructions below.

4. Using an approved red GASOLINE container, add fuel mixture slowly, being careful to avoid spilling. DO NOT overfill fuel tank. Leave space in the tank to allow fuel to expand without overflowing.

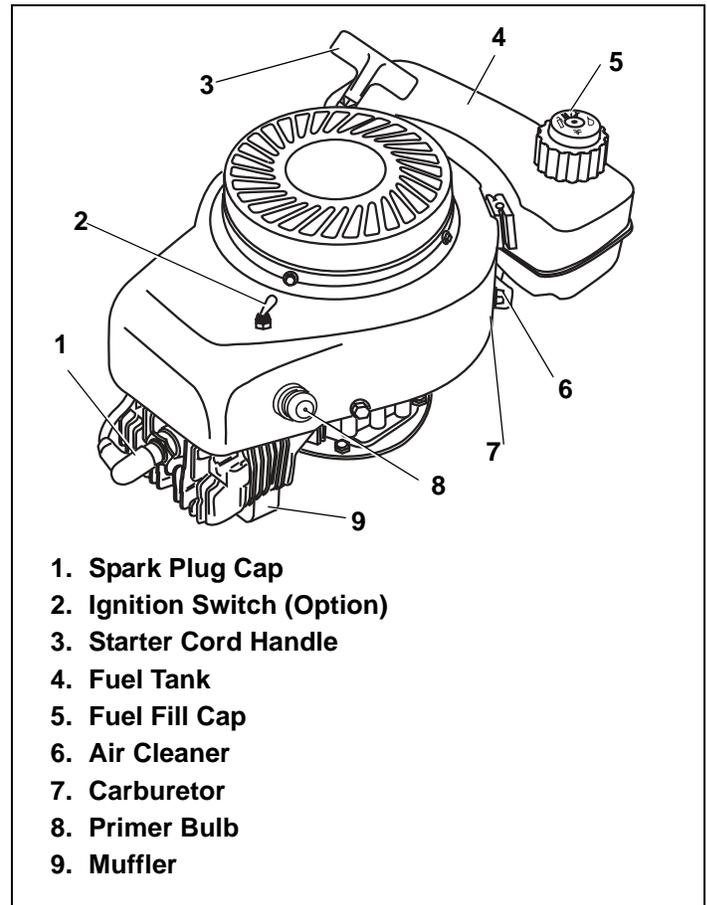


Figure 5. Engine Model TV085XA

5. Replace fuel fill cap securely and wipe up spilled fuel mixture before starting engine. If fuel mixture is spilled DO NOT start engine. Move machine away from area of spillage. Avoid creating any source of ignition until fuel vapors are gone.

NOTE

Replace a damaged or missing fuel fill cap only with a genuine TecumsehPower replacement Fuel Fill Cap. Failure to do so may **VOID YOUR WARRANTY**.

C. Check the Following Items

1. Be sure ignition switch on engine or equipment is in "ON", "RUN", or "START" position. See Figure 6.
2. Be sure vent hole on fuel fill cap is free of debris, if present (see equipment manufacturer's instructions).
3. Be sure that screw vent fuel fill cap, if present (see equipment manufacturer's instructions) is open. See Figure 7.
4. Place optional fuel valve in "OPEN" position, if fuel valve is present and all switches are on. See Figure 8.

V. Starting Your Engine

WARNING To avoid serious injury or death, an adult should start this engine. Only allow children to start engine if an adult has determined they are experienced and capable of such operation.

WARNING If you are unable to start this engine after following instructions in this manual, contact your Authorized TecumsehPower Servicing Dealer. To avoid serious burn injuries or damage to your engine, DO NOT attempt to start or troubleshoot this engine in any other way. For example:

- DO NOT use starting fluid.
- DO NOT spray flammable vapors into carburetor or onto air cleaner.
- DO NOT put flammable liquids into carburetor or onto air cleaner.
- DO NOT operate engine or pull on starter rope with spark plug removed. Fuel can spray from spark plug hole and ignite.

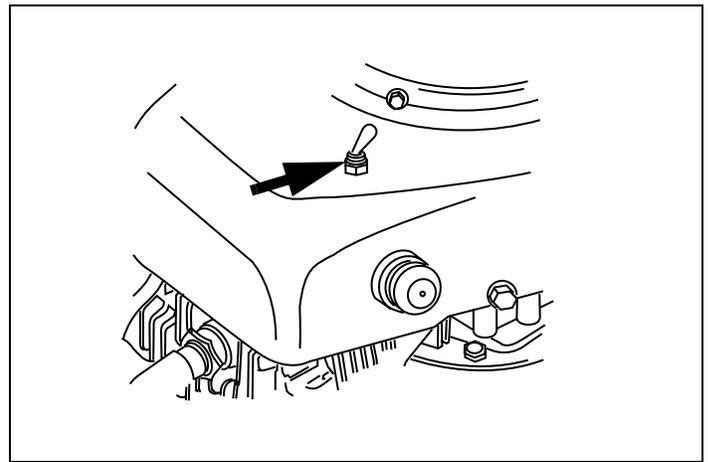


Figure 6. ON/OFF Switch

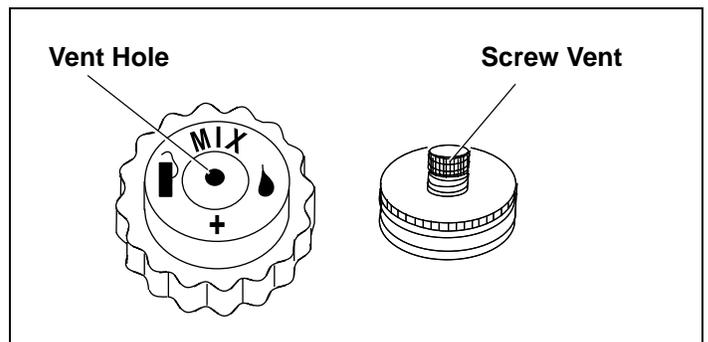


Figure 7. Fuel Cap Vent Hole and Optional Screw Vent

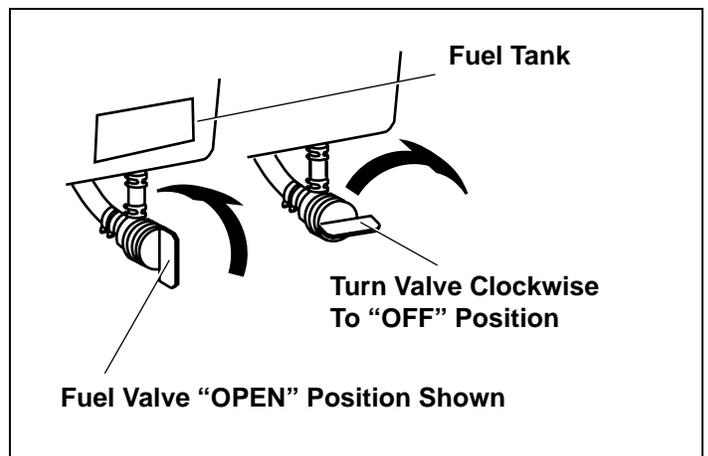


Figure 8. Fuel Valve Positions

A. Engine With Remote Control

1. To avoid carbon monoxide poisoning, be sure engine is outdoors in a well-ventilated area.
2. Move switch to "ON" position. See Figure 6 on page 5. Afterward, continue reading instructions below.
3. Move choke control on engine to "FULL CHOKE" position. See Figures 11 and 12.
4. When starting a cold engine, push primer bulb firmly with your thumb 3 times, allowing primer bulb to return completely to original position between pushes. See Figure 13 on page 7. Afterward, continue reading instructions below.

NOTES

Cooler temperatures may require pushing primer bulb firmly with your thumb 5 times.

Some engines are equipped with a remote throttle control. See Figure 10.

DO NOT use choke or primer bulb to restart a warm engine after a short shutdown. Doing so will flood the engine and may result in equipment malfunction. See Figure 13 on page 7. Afterward, continue reading instructions below.

WARNING

When pulling starter rope, the rope can unexpectedly jerk back toward engine causing serious injury. To avoid this risk, carefully follow these instructions:

5. Grasp starter cord handle. See Figure 14 on page 7. Afterward, continue reading instructions below.
 - a. Pull rope out slowly until you feel drag.
 - b. Without allowing the rope to retract, continue pulling rope with one rapid full arm stroke.
 - c. Return rope *slowly* to original position.

NOTE

Following the instructions listed in the steps above avoids potential damage to the recoil mechanism.

6. When engine starts:
 - a. Move choke control to "1/2 CHOKE" position until engine runs smoothly.
 - b. Next, move choke control to "NO CHOKE" position.
 - c. Move throttle control to desired speed in "RUN" range. See Figures 9 and 10.

NOTES

If engine starts but falters when choke control is moved to "NO CHOKE" position:

- a. Momentarily move choke control back to "FULL CHOKE" position.
- b. Next, move choke control to "1/2 CHOKE" position until engine runs smoothly.
- c. Finally, move choke control to "NO CHOKE" position.

If engine dies after choke control is moved to "NO CHOKE" position, repeat steps 2 thru 6 to restart engine.

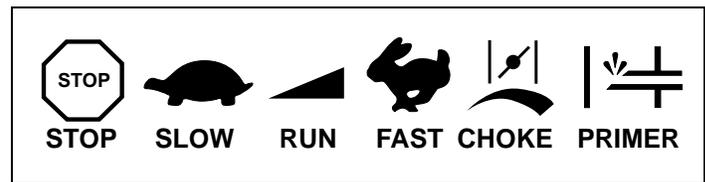


Figure 9. Typical Control Symbols

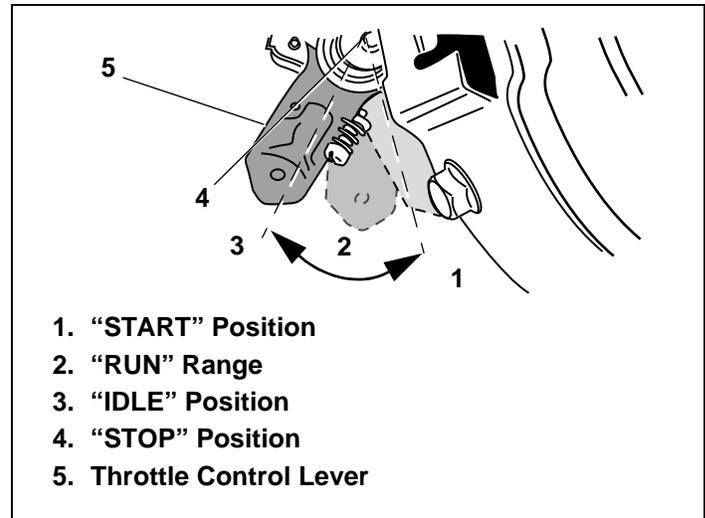


Figure 10. Remote Throttle Control

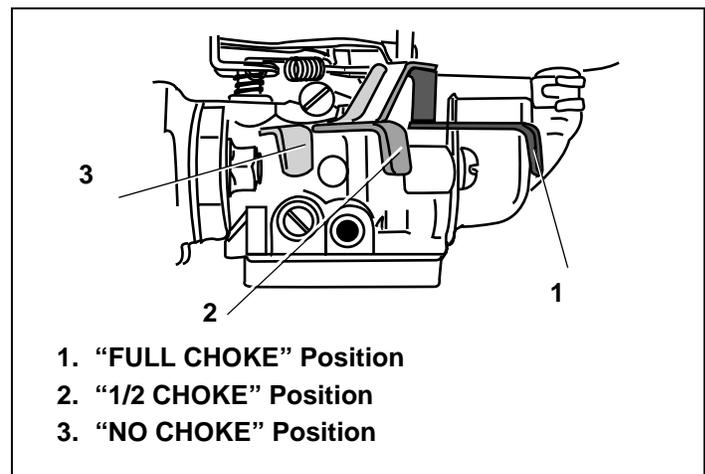


Figure 11. Choke Control "A"

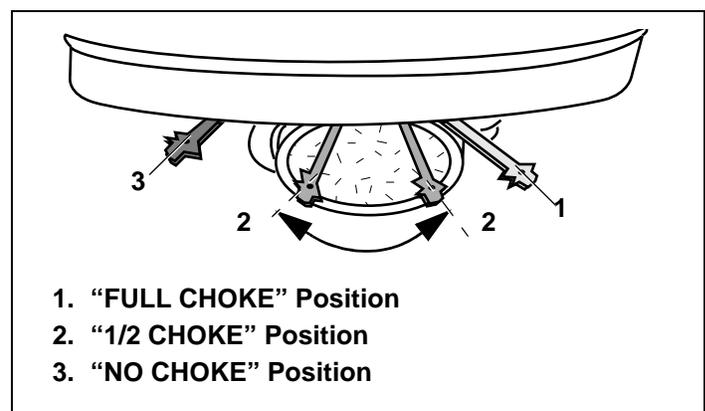


Figure 12. Choke Control "B"

7. If engine fires but does not continue to run, move choke control to “NO CHOKE” position and start engine.
8. If engine fails to start after 3 attempts in the “NO CHOKE” position, repeat steps 2 thru 7.
9. If engine does not start after following steps 1 thru 8, contact your Authorized Tecumseh Power Servicing Dealer. DO NOT attempt to start or troubleshoot this engine in any other way.

B. Engine With Variable Speed Control

NOTE

Some engines are equipped with a fixed speed control.

1. To avoid carbon monoxide poisoning, be sure engine is outdoors in a well-ventilated area.
2. Move throttle control lever to “FAST” or “START” position, if present (see equipment manufacturer’s instructions). See Figure 15.
3. Move choke control on engine to “FULL CHOKE” position. See Figures 11 and 12 on page 6. Afterward, continue reading instructions below.
4. When starting a cold engine, push primer bulb firmly with your thumb 3 times, allowing primer bulb to return completely to original position between pushes. See Figure 13.

NOTES

Cooler temperatures may require pushing primer bulb firmly with your thumb 5 times.

DO NOT use choke or primer bulb to restart a warm engine after a short shutdown. Doing so will flood the engine and may result in equipment malfunction. See Figure 13.

WARNING When pulling starter rope, the rope can unexpectedly jerk back toward engine causing serious injury. To avoid this risk, carefully follow these instructions:

5. Grasp starter cord handle. See Figure 14.
 - a. Pull rope out slowly until you feel drag.
 - b. Without allowing the rope to retract, continue pulling rope with one rapid full arm stroke.
 - c. Return rope *slowly* to original position.

NOTE

Following the instructions listed in the steps above avoids potential damage to the recoil mechanism.

6. When engine starts:
 - a. Move choke control to “1/2 CHOKE” position until engine runs smoothly.
 - b. Next, move choke control to “NO CHOKE” position.
 - c. Move throttle control lever to desired speed in “RUN” range. See Figure 15.

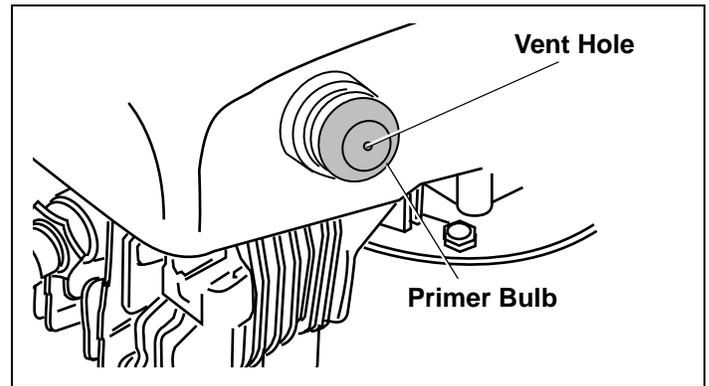


Figure 13. Engine Primer Bulb

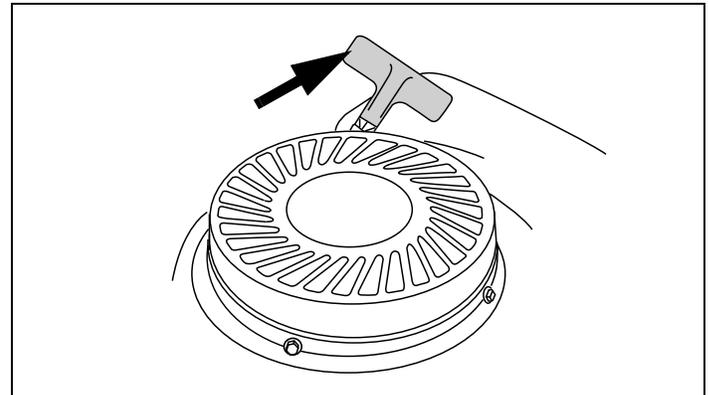


Figure 14. Starter Cord Handle

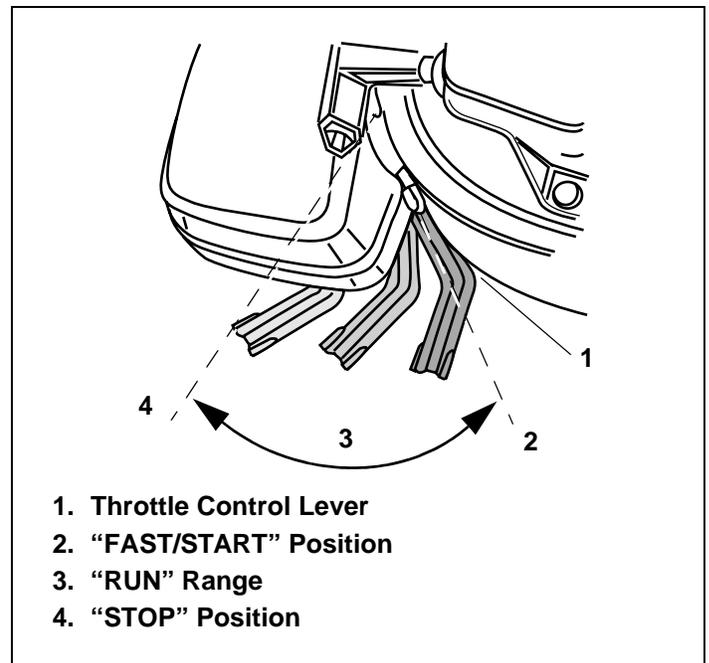


Figure 15. Variable Speed Engine Control

NOTES

If engine starts but falters when choke control is moved to "NO CHOKE" position:

- Momentarily move choke control back to "FULL CHOKE" position. See Figures 11 and 12 on page 6. Afterward, continue reading instructions below.
- Next, move choke control to "1/2 CHOKE" position until engine runs smoothly.
- Finally, move choke control to "NO CHOKE" position.

If engine dies after choke control is moved to "NO CHOKE" position, repeat steps 2 thru 6 to restart engine.

- If engine fires but does not continue to run, move choke control to "NO CHOKE" position and start engine.
- If engine fails to start after 3 attempts in the "NO CHOKE" position, repeat steps 2 thru 7.
- If engine does not start after following steps 1 thru 8, contact your Authorized TecumsehPower Servicing Dealer. DO NOT attempt to start or troubleshoot this engine in any other way.

VI. Stopping Your Engine and Short-Term Storage

Stop engine according to equipment manufacturer's instructions.

WARNING To avoid unsupervised operation of an engine, especially by children, NEVER leave it unattended when it is running. Always turn off the engine after use and remove ignition key, if provided. Failure to do so may lead to serious injury or death.

WARNING NEVER store engine with fuel in the fuel tank inside a building with potential sources of ignition such as hot water or space heaters, clothes dryers, electric motors, etc. Doing so may lead to an explosion resulting in death or serious injury.

- Move remote control on equipment, or engine mounted control, or any ignition stop switch on engine, to "STOP" or "OFF" position, if present (see equipment manufacturer's instructions). See Figures 6, 10 and 15 beginning on page 5. Afterward, continue reading instructions below.
- Close air vent screw on fuel fill cap, if present (see equipment manufacturer's instructions). See Figure 7 on page 5. Afterward, continue reading instructions below.

VII. Maintenance

WARNING To avoid serious injury or death, an adult should perform maintenance on this engine. Only allow children to perform maintenance if an adult has determined they are experienced and capable of such operation.

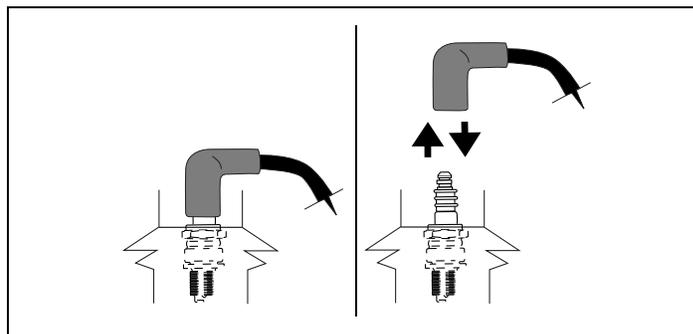


Figure 16. Disconnecting/Connecting Spark Plug

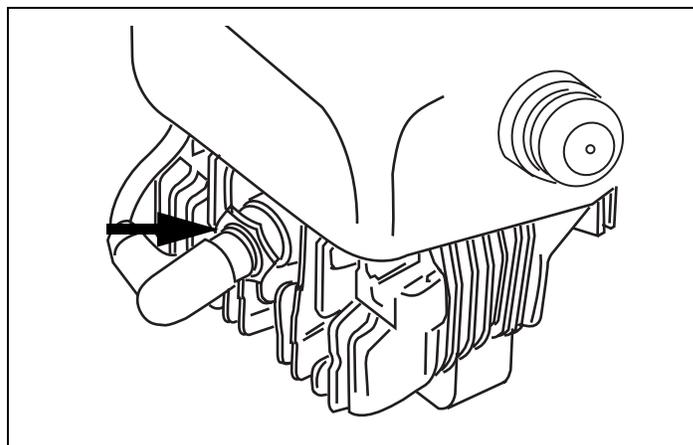


Figure 17. Typical Spark Plug Connection

CAUTION The exhaust deflector and other engine parts become extremely hot during operation and remain hot after the engine has stopped. To avoid severe burns on contact, STAY AWAY from these areas.

WARNING To prevent accidental starting when working on equipment, always:

- Carefully disconnect spark plug wire and keep it away from spark plug. See Figures 16 and 17.
 - Keep the disconnected spark plug wire securely away from metal parts where arcing could occur.
 - Carefully attach the spark plug wire to the grounding post, if provided.
- Disconnect battery at negative terminal first, if engine is equipped with a DC electric starter.
- Turn all engine switches to "OFF" position.
- Remove ignition key, if provided.

A. Removing Debris from Engine

Before each use, remove all dirt and debris from the following areas:

- Cooling Fins
- Air Inlets
- Fuel Fill Cap Air Vent
- Air Vent Screw
- Levers and Linkage

Removing debris will insure adequate cooling, correct engine speed and reduce the risk of fire. See Figure 18.

Some engines are equipped with an optional foam debris guard or a metal debris guard called the "Top Hat". Both debris guards must also be kept clean to prevent engine overheating. See Figure 19.

NOTES

Contact your Authorized TecumsehPower Servicing Dealer for genuine replacement Air Intake Debris Guard Kits.

Inspect foam debris guard for discoloration or dirt accumulation. If either is present, see "I. Servicing Foam Filters" and/or "II. Servicing Screens" on page 10.

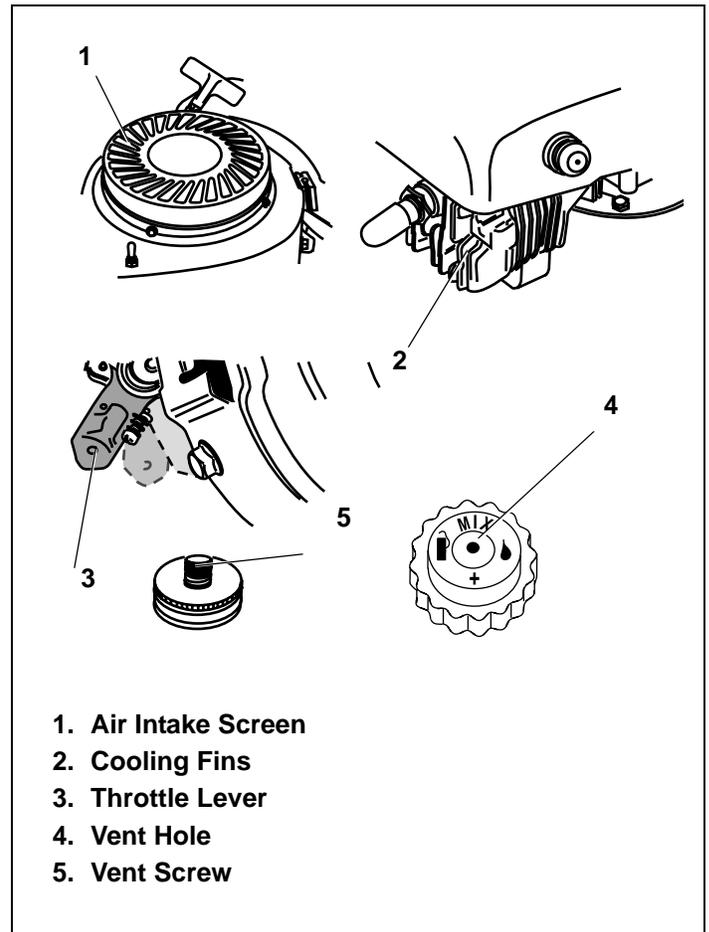


Figure 18. Debris Areas

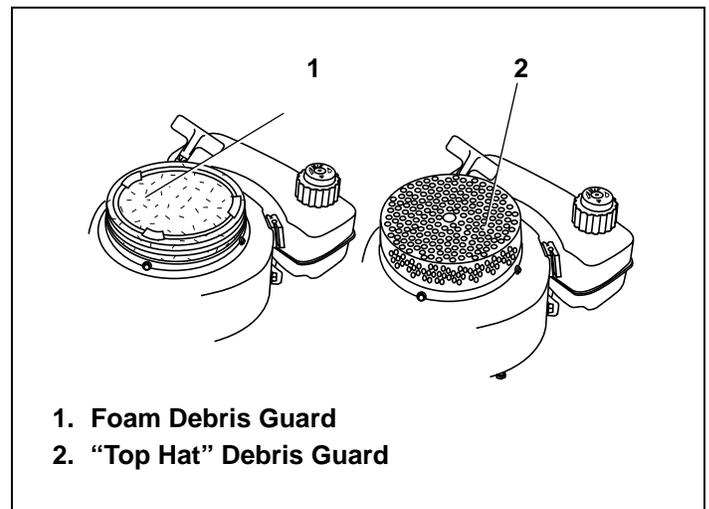


Figure 19. Air Intake Debris Guards

B. Cleaning/Replacing Air Filters

Your engine has an air cleaner which helps prevent premature engine wear and failure. NEVER run engine without complete air cleaner installed on engine. The filters in the air cleaner periodically need to be cleaned or replaced.

I. Servicing Foam Filters

Clean and re-oil foam filters every 3 months or every 25 operating hours. Clean and re-oil daily if used in extremely dusty conditions. After removing the filter, follow the cleaning instructions below.

1. Wash in warm water and detergent solution then press (DO NOT twist) until all dirt is removed.
2. Rinse thoroughly until water is clear.
3. Wrap in a clean cloth and press (DO NOT twist) until completely dry.
4. Saturate with engine oil and press (DO NOT twist) to distribute oil.
5. Remove excess oil.

II. Servicing Screens

1. Wash in a solution of water and detergent.
2. Rinse thoroughly in clear water. Air dry.

III. Air Filter Removal/Installation

1. Loosen filter cover by pulling tab outward. See Figure 20.
2. Remove the filter cover.
3. Remove the flocked screen.
4. Remove the foam filter.
5. Remove the spacer screen.
6. Thoroughly clean the inside of filter cover and filter body.
7. Inspect screens and foam filter for discoloration or dirt accumulation. If either is present, see "I. Servicing Foam Filters" and/or "II. Servicing Screens" instructions.
8. Install spacer screen.
9. Install foam filter.
10. Install flocked screen.
11. Install filter cover.

NOTE

Contact your Authorized TecumsehPower Servicing Dealer for a genuine replacement Air Cleaner.

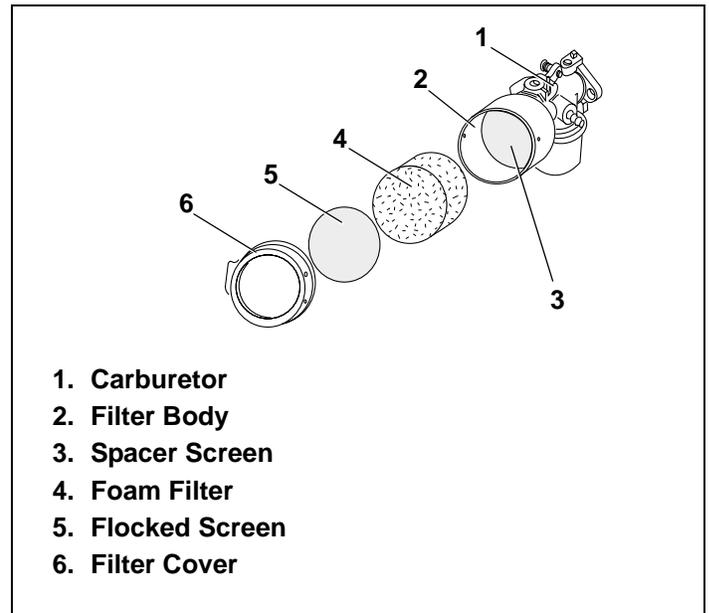


Figure 20. Air Filter

C. Spark Plug

Check spark plug yearly or every 100 operating hours.

1. Clean area around spark plug.
2. Remove and inspect spark plug.
3. Replace spark plug if porcelain is cracked or if electrodes are:
 - Pitted
 - Burned
 - Fouled with Deposits
4. Check electrode gap with wire feeler gauge and set gap to—.030 (0.76 mm) if necessary. See Figure 21.
5. Install spark plug and tighten securely.

NOTE

A resistor spark plug must be used for replacement. Contact your Authorized TecumsehPower Servicing Dealer for a genuine replacement Resistor Spark Plug.

D. Carburetor

If you think your carburetor needs adjusting, see your nearest Authorized TecumsehPower Servicing Dealer. Engine performance should not be affected at altitudes up to 7,000 feet (2,134 meters). For operation at higher elevations, contact an Authorized TecumsehPower Servicing Dealer.

E. Engine Speed

WARNING

To avoid serious injury or death, DO NOT modify engine in any way.

Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. NEVER tamper with factory setting of engine governor.

Running the engine faster than the speed set at the factory can be dangerous and will **VOID THE ENGINE WARRANTY.**

F. Muffler and Cylinder Exhaust Ports

The muffler and cylinder exhaust ports require cleaning after every 75 to 100 hours of operation.

NOTE

For this maintenance procedure it is recommended that the engine be taken to an Authorized TecumsehPower Servicing Dealer.

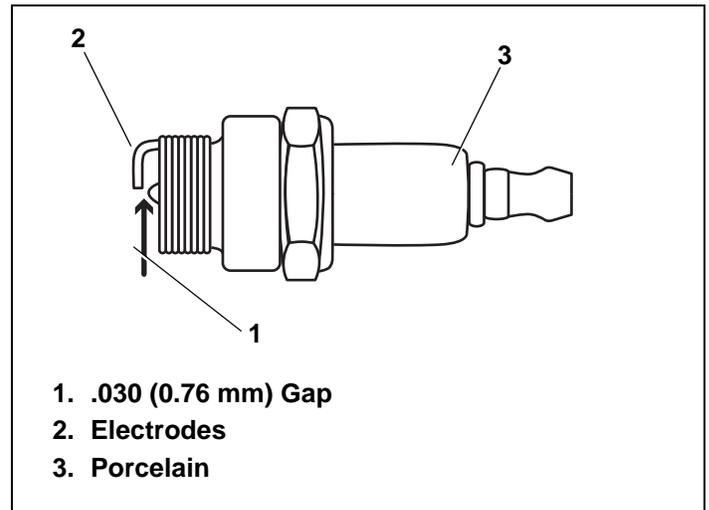


Figure 21. Resistor Spark Plug

VIII. Transporting Your Engine

WARNING

NEVER transport this engine inside another vehicle or in any enclosed space if there is any gasoline in the tank. Fuel vapor or spilled fuel may ignite leading to serious injury or death.

If there is fuel in the fuel tank, close the fuel shut-off valve, if equipped, and transport the engine upright in an open vehicle, such as an open trailer or open bed of a pickup truck.

If you DO NOT have an open vehicle and have to transport the engine upright in a closed vehicle, follow these steps for emptying the fuel tank before transporting:

1. Empty fuel tank by using a commercially available suction device designed for use with gasoline.

WARNING

To avoid serious injury or death, DO NOT pour fuel from engine or siphon fuel by mouth.

2. Drain fuel into an approved red GASOLINE container, being careful to avoid spilling.
3. Run the engine until remaining fuel is consumed.

WARNING

NEVER leave the engine unattended when it is running and NEVER run engine in enclosed areas to avoid death or serious injury.

IX. Storing Your Engine

A. Short-Term/Seasonal Storage

I. Clean Engine

Before servicing the engine remove the carburetor cover and/or blower housing. Remove grass clippings, dirt and debris from the following areas:

- Cooling Fins
- Air Intake Screen
- Levers
- Linkage
- Guards
- Carburetor
- Head

Removing debris will insure adequate cooling, correct engine speed and reduce the risk of fire.

II. Fuel Storage

 **WARNING** NEVER store engine with fuel in the fuel tank inside a building with potential sources of ignition such as hot water or space heaters, clothes dryers, electric motors, etc. Doing so may lead to an explosion resulting in death or serious injury.

NOTES

If engine fuel stored in the gas tank and/or an approved gas container is to be unused without gasoline stabilizer for more than 15-30 days, prepare it for short term/seasonal storage. See "IV. Fuel Treatment" instructions. Afterward, continue reading instructions below.

*If engine fuel is to be stored for more than one season, without gasoline stabilizer, it will gradually deteriorate. Also, if it is stored in the engine's gas tank without gasoline stabilizer it is likely that your carburetor will have gum deposits, a clogged fuel system and **WILL VOID YOUR WARRANTY**. Prepare the fuel for extended storage. See "B. Extended Storage" instructions on page 13. Afterward, continue reading instructions.*

III. Fuel System

To avoid stale gas and carburetor problems, treat the fuel system in the following method below:

NOTES

TecumsehPower Company recommends using ULTRA-FRESH™ Gasoline Stabilizer as an acceptable method of minimizing formation of fuel gum deposits during storage. This product is available from your Authorized TecumsehPower Servicing Dealer.

Always follow mix ratio found on stabilizer container. Failure to do so may result in equipment damage.

It is NOT necessary to drain stabilized gas from carburetor.

IV. Fuel Treatment

1. Add fuel stabilizer according to manufacturer's instructions.
2. Run engine at least 10 minutes after adding stabilizer to allow it to reach carburetor.

 **WARNING** NEVER store engine with fuel in the fuel tank inside a building with potential sources of ignition such as hot water or space heaters, clothes dryers, electric motors, etc. Doing so may lead to an explosion resulting in death or serious injury.

NOTE

Instead of using a fuel preservative/stabilizer, you can empty the fuel tank as described under "I. Draining Fuel" instructions. See "B. Extended Storage" on page 13.

B. Extended Storage

I. Draining Fuel

NOTES

Clean debris from engine before draining fuel from the carburetor. See "I. Clean Engine" instructions on page 12. Afterward, continue reading instructions below.

If you have prepared your fuel for short-term storage it is NOT necessary to drain fuel that contains stabilizer from your carburetor. See "A. Short-Term/Seasonal Storage" instructions on page 12. Afterward, continue reading instructions below.

WARNING To avoid serious injury or death, DO NOT pour fuel from engine or siphon fuel by mouth.

1. To prevent serious injury from fuel fires, empty fuel tank by running engine until it stops from lack of fuel. DO NOT attempt to pour fuel from engine.
2. Run the engine while waiting until the remaining fuel is consumed.

WARNING NEVER leave the engine unattended when it is running and NEVER run engine in enclosed areas to avoid death or serious injury.

3. Begin servicing the cylinder bore. See "II. Oil Cylinder Bore" instructions.

NOTE

If you operate the engine during all four seasons, it is not necessary to lubricate the cylinder bore.

II. Oil Cylinder Bore

CAUTION When lubricating cylinder bore, fuel may spray from spark plug hole. To prevent serious injury from fuel fires, follow these instructions:

1. Carefully disconnect spark plug wire and keep it away from spark plug.
 - Keep the disconnected spark plug wire securely away from metal parts where arcing could occur.
 - Carefully attach the spark plug wire to the grounding post, if provided.
2. Remove spark plug.
3. Squirt 1oz. (30 ml) of clean engine oil into spark plug hole.
4. Cover spark plug hole with rag to prevent fuel from spraying from spark plug hole when starter rope is pulled.

NOTES

For engines equipped with recoil starters proceed to Step 5.

For engines equipped with electric starters proceed to Step 6.

5. Grasp starter cord handle:
 - a. Pull starter cord handle out slowly using a full arm stroke.
 - b. Repeat once. (This will distribute oil throughout the cylinder to prevent corrosion during storage.)
6. Install spark plug.
7. Carefully disconnect spark plug wire from grounding post, if provided.
8. Connect spark plug wire to spark plug before attempting to start engine.

III. Battery

See equipment manufacturer's instructions for proper battery storage if machine is equipped with a battery.

CALIFORNIA & US EPA EMISSION CONTROL WARRANTY STATEMENT

The U. S. Environmental Protection Agency ("EPA"), the California Air Resources Board ("CARB") and TecumsehPower Company are pleased to explain the Federal and California Emission Control Systems Warranty on your new small off-road engine. In California, new 1995 and later small off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. In other states, new 1997 and later model year engines must be designed, built and equipped, at the time of sale, to meet the U.S. EPA regulations for small non-road engines. TecumsehPower Company will warrant the emission control system on your small off-road engine for the periods of time listed below, provided there has been no abuse, neglect, unapproved modification, or improper maintenance of your small off-road engine.

Your emission control system may include parts such as the carburetor, air cleaner assembly, ignition system, exhaust system, crankcase breather assembly and, the evaporative control system. Also included may be the compression release system and other emission-related assemblies.

Where a warrantable condition exists, TecumsehPower Company will repair your small off-road engine at no cost to you for diagnosis, parts and labor.

MANUFACTURER'S EMISSION CONTROL SYSTEM WARRANTY COVERAGE

Emission control systems on 1995 and later model year California small off-road engines are warranted for two years as hereinafter noted. In other states, 1997 and later model year engines are also warranted for two years. If, during such warranty period, any emission-related part on your engine is defective in materials or workmanship, the part will be repaired or replaced by TecumsehPower Company.

OWNER'S WARRANTY RESPONSIBILITIES

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your Operator's Manual, but TecumsehPower Company will not deny warranty solely due to the lack of receipts or for your failure to provide written evidence of the performance of all scheduled maintenance.

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

You are responsible for presenting your small off-road engine to a TecumsehPower Authorized Service Outlet

(any TecumsehPower Registered Service Dealer, TecumsehPower Authorized Service Distributor or TecumsehPower Central Warehouse Distributor) as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

Warranty service can be arranged by contacting either an Authorized TecumsehPower Servicing Dealer and/or TecumsehPower Company, c/o Service Manager, 900 North Street, Grafton, WI 53024-1499. Telephone 1-262-377-2700 [or in USA/Canada call 1-800-558-5402].

IMPORTANT NOTE

This warranty statement explains your rights and obligations under the Emission Control System Warranty ("ECS Warranty") which is provided to you by TecumsehPower Company pursuant to California law. TecumsehPower Company also provides to original purchasers of new TecumsehPower engines the TecumsehPower Company Limited Warranties for New TecumsehPower Engines and Electronic Ignition Modules. The TecumsehPower Company Limited Warranties for New TecumsehPower Engines and Electronic Ignition Modules ("TecumsehPower Company Warranty") are located on the back cover of the Operator's Manual, enclosed with all new TecumsehPower engines. The ECS Warranty applies only to the emission control system of your new engine. To the extent that there is any conflict in terms between the ECS Warranty and the TecumsehPower Company Warranty, the ECS Warranty shall apply except in any circumstances in which the TecumsehPower Company Warranty may provide a longer warranty period. Both the ECS Warranty and the TecumsehPower Company Warranty describe important rights and obligations with respect to your new engine.

Warranty service can only be performed by a TecumsehPower Authorized Servicing Dealer. At the time of requesting warranty service, evidence must be presented of the date of sale to the original purchaser. The purchaser shall pay any charges for making service calls and/or for transporting the products to and from the place where the inspection and/or warranty work is performed. The purchaser shall be responsible for any damage or loss incurred in connection with the transportation of any engine or any part(s) thereof submitted for inspection and/or warranty work.

If you have any questions regarding your warranty rights and responsibilities, you should contact TecumsehPower Company at 1-262-377-2700 or in USA/Canada call 1-800-558-5402.

Revised February 2008

IMPORTANT!

The Emission Regulations may be different for your country. The Emissions Control Warranty Statement is only applicable to engines with an emissions compliance statement and decal that references "Emissions Regulations".

EMISSION CONTROL SYSTEM WARRANTY

Emission Control System Warranty (“ECS Warranty”) for 1995 and later model year California small off-road engines (for other states, 1997 and later model year engines):

A. APPLICABILITY: This warranty shall apply to 1995 and later model year California small off-road engines (for other states, 1997 and later model year engines). The ECS Warranty Period shall begin on the date the new engine or equipment is delivered to its original, end-use purchaser, and shall continue for 24 consecutive months thereafter.

B. GENERAL EMISSIONS WARRANTY COVERAGE:

TecumsehPower Company warrants to the original, end-use purchaser of the new engine or equipment and to each subsequent purchaser that each of its small off-road engines is:

1. Designed, built and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code, and
2. Free from defects in materials and workmanship which, at any time during the ECS Warranty Period, will cause a warranted emissions-related part to fail to be identical in all material respects to the part as described in the engine manufacturer’s application for certification.

C. THE ECS WARRANTY ONLY PERTAINS TO EMISSION-RELATED PARTS ON YOUR ENGINE AS FOLLOWS:

1. Any warranted, emissions-related parts which are not scheduled for replacement as required maintenance in the Operator’s Manual shall be warranted for the ECS Warranty Period. If any such part fails during the ECS Warranty Period, it shall be repaired or replaced by TecumsehPower Company according to Subsection 4 below. Any such part repaired or replaced under the ECS Warranty shall be warranted for any remainder of the ECS Warranty Period.
2. Any warranted, emissions-related part which is scheduled only for regular inspection as specified in the Operator’s Manual shall be warranted for the ECS Warranty Period. A statement in such written instructions to the effect of “repair or replace as necessary”, shall not reduce the ECS Warranty Period. Any such part repaired or replaced under the ECS Warranty shall be warranted for the remainder of the ECS Warranty Period.
3. Any warranted, emissions-related part which is scheduled for replacement as required maintenance in the Operator’s Manual, shall be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by TecumsehPower Company according to Subsection 4 below. Any such emissions-related part repaired or replaced under the ECS Warranty, shall be warranted for the remainder of the ECS Warranty Period prior to the first scheduled replacement point for such emissions-related part.
4. Repair or replacement of any warranted, emissions-related part under this ECS Warranty shall be performed at no charge to the owner at a TecumsehPower Authorized Service Outlet.

5. The owner shall not be charged for diagnostic labor which leads to the determination that a part covered by the ECS Warranty is in fact defective, provided that such diagnostic work is performed at a TecumsehPower Authorized Service Outlet.
6. TecumsehPower Company shall be liable for damages to other original engine components or approved modifications proximately caused by a failure under warranty of an emission-related part covered by the ECS Warranty.
7. Throughout the ECS Warranty Period, TecumsehPower Company shall maintain a supply of warranted emission-related parts sufficient to meet the expected demand for such emission-related parts.
8. Any TecumsehPower Company authorized and approved emission-related replacement part may be used in the performance of any ECS Warranty maintenance or repair and will be provided without charge to the owner. Such use shall not reduce TecumsehPower Company ECS Warranty obligations.
9. Unapproved add-on or modified parts may not be used to modify or repair a TecumsehPower engine. Such use voids this ECS Warranty and shall be sufficient grounds for disallowing an ECS Warranty claim. TecumsehPower Company shall not be liable hereunder for failures of any warranted parts of a TecumsehPower engine caused by the use of such an unapproved add-on or modified part.

EMISSION-RELATED PARTS INCLUDE THE FOLLOWING:

1. Carburetor Assembly including internal components:
 - a) Carburetor gaskets
 - b) Intake pipe
2. Air Cleaner Assembly including components:
 - a) Air filter element
3. Ignition System including components:
 - a) Spark plug
 - b) Ignition module
 - c) Flywheel assembly
4. Exhaust System including components:
 - a) Catalytic muffler (*if so equipped*)
 - b) Muffler gasket (*if so equipped*)
 - c) Exhaust manifold (*if so equipped*)
5. Crankcase Breather Assembly including components
 - a) Breather connection tube
6. Evaporative Control System including components:
 - a) Fuel line(s)
 - b) Fuel filter
 - c) Canister (*if so equipped*)
 - d) Fuel tank (*if so equipped*)
 - e) Fuel fill cap (*if so equipped*)

Revised February 2008

IMPORTANT!

The Emission Regulations may be different for your country. The Emissions Control Warranty Statement is only applicable to engines with an emissions compliance statement and decal that references “Emissions Regulations”.

XII. Warranty Information

LIMITED WARRANTY FOR NEW TECUMSEHPower ENGINES AND ELECTRONIC IGNITION MODULES

For the time period shown below from the date of purchase and subject to the exceptions and limitations described herein, TecumsehPower Company will, at its option as the exclusive remedy, either repair or replace for the original purchaser, free of charge, any part of any new TecumsehPower engine which is found, upon examination by any Authorized TecumsehPower Servicing Outlet or by TecumsehPower's Service Division, to be **DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP**. This Limited Warranty **DOES NOT COVER** (i) any TecumsehPower engine or part(s) thereof used to power any vehicle in competitive racing and/or used on any commercial or rental track, or (ii) defects or damage caused by alterations or modifications of new TecumsehPower engines or parts or by normal wear, accidents, improper maintenance, improper use or abuse of the product, or failure to follow the instructions contained in an Instruction Manual for the operation of the new TecumsehPower engine or part. The cost of normal maintenance or replacement of service items which are not defective shall be paid for by the original purchaser. At the time warranty service is requested, evidence must be presented of the date of purchase by the original purchaser. Any charge for making service calls and/or for transporting any engine or part(s) thereof to and from the place where the inspection and/or warranty work is performed is payable solely by the purchaser. The purchaser is responsible for any damage or loss incurred in connection with the transportation of any engine or part(s) thereof submitted for inspection and/or warranty work. **WARRANTY SERVICE CAN ONLY BE PERFORMED BY A TECUMSEHPower AUTHORIZED SERVICE OUTLET.** Warranty service can be arranged by contacting a TecumsehPower Authorized Service Outlet (any TecumsehPower Registered Service Dealer, TecumsehPower Authorized Service Distributor, or TecumsehPower Central Warehouse Distributor) or by contacting TecumsehPower Company c/o Service Manager, 900 North Street, Grafton, Wisconsin USA 53024-1499.

Warranty Category ⁽⁶⁾	"CONSUMER USE" ⁽⁴⁾		"COMMERCIAL USE" ⁽⁵⁾	
	Within U.S.A. and Canada	Outside U.S.A. and Canada	Within U.S.A. and Canada	Outside U.S.A. and Canada
(A)	90 Day	90 Day ⁽¹⁾	No Warranty	No Warranty
(B)	1 Year	1 Year ⁽¹⁾	1 Year	1 Year
(C)	2 Years	1 Year ⁽¹⁾	1 Year	1 Year
(D)	2 Years	2 Years ⁽²⁾	1 Year	1 Year
(E)	2 Years	2 Years	1 Year	1 Year
(H)	2 'n 10 ⁽³⁾	2 'n 10 ⁽³⁾	1 Year	1 Year
(K)	2 'n 10 ⁽³⁾	2 'n 10 ⁽³⁾	2 'n 10 ⁽³⁾	1 Year
(M) ⁽⁷⁾	3 Years	3 Years	1 Year	1 Year

- (1) 2 years for Member States of the European Union. Consumers may have additional legal rights not affected by the terms of this warranty pursuant to EU Directive 1999/44/EC and the national legislation of certain Member States of the European Union.
- (2) 1 year for Australian/New Zealand for rotary mower engines.
- (3) 2 years on engine and 10 years (the first 5 years covering parts and labor only; the second 5 years covering parts only) on electronic ignition.
- (4) For purposes of this warranty policy, "consumer use" shall mean consumer's personal, residential, household use by the original retail purchaser.
- (5) For purposes of this warranty policy, "commercial use" shall mean all other uses, including use for commercial, income producing, or rental purposes.
- (6) The engine warranty category of your engine can be determined by review of the engine model number on the "Important Engine Information" decal. One letter in the engine model number will be surrounded by parenthesis (A), (B), (C), (D), (E), (H) (K) or (M) and that letter is your engine warranty category designation.
- (7) Qualification for three (3) year consumer use warranty under engine warranty category (M) may be determined by notation of an (M) designation on the "Important Engine Information" decal located on the engine housing or an addendum decal affixed adjacent thereto.

THIS EXPRESS WARRANTY IS SUPPLEMENTED BY THE TECUMSEHPower CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT, if any.

THIS EXPRESS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. Neither TecumsehPower Company nor any of its affiliates makes any warranties, representations, or promises, written or oral, as to the quality of the engine or any of its parts, other than as set forth herein. **ANY IMPLIED WARRANTY OF MARKETABILITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT THAT EITHER MAY APPLY TO ANY TECUMSEHPower ENGINE OR PART(S) THEREOF, SHALL BE LIMITED IN DURATION TO THE PERIODS OF THE EXPRESS WARRANTIES SHOWN IN THE WARRANTY PERIOD CHART ABOVE AND TO THE EXTENT PERMITTED BY LAW ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. IN NO EVENT WILL TecumsehPower COMPANY BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES AND/OR EXPENSES, INCLUDING, BUT NOT LIMITED TO, ANY LOSS OF TIME, INCONVENIENCE, LOSS OF UNIT USE OR ANY COST OR EXPENSE OF SUBSTITUTE UNITS DURING PERIODS OF MALFUNCTION OR NON-USE.** Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This Limited Warranty gives you specific legal rights and you may also have other legal rights which vary from state-to-state.

TecumsehPower Company neither assumes nor authorizes any other person, natural or corporate, to assume for TecumsehPower Company any other obligations or liabilities in connection with or with respect to any TecumsehPower product or parts. The seller or dealer of a TecumsehPower product or part has no authority, whatsoever, to make any representations or promises on behalf of TecumsehPower Company or to modify the terms or limitations of TecumsehPower's warranty in any way.

Revised February 2008

WARNING CALIFORNIA PROPOSITION 65

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



TecumsehPower Company • Grafton, Wisconsin 53024-1499 • USA

Telephone: 1-800-558-5402

Visit us at: www.TecumsehPower.com

181-624-14
(English) 6/01/08