

HH100, HH120

OH120, OH140, OH160, OH180



OWNER'S MANUAL

and OPERATING INSTRUCTIONS for

TECUMSEH

MODELS

OH120 OH180
OH140 HH100
OH160 HH120

HORIZONTAL CRANKSHAFT
CAST IRON • AIR COOLED
FOUR-CYCLE ENGINE



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL AND ANY PROVIDED WITH THE EQUIPMENT ON WHICH THIS ENGINE IS USED BEFORE ATTEMPTING TO OPERATE YOUR TECUMSEH ENGINE.



THESE SYMBOLS MAY APPEAR ON THE ENGINE:



FAST



SLOW



STOP



FULL



CHOKE



OFF

Rev. 5-1-89 **181-631-1**

OIL & FUEL RECOMMENDATIONS

TO OPERATE ENGINE, YOU WILL NEED THE FOLLOWING:

① A CLEAN, HIGH QUALITY DETERGENT OIL.

Be sure original container is marked:
A.P.I. service "SF" or "SE".

FOR SUMMER (ABOVE 32°F) USE SAE 30 OIL.
(SAE 10W30 is an acceptable substitute.)

Use SAE 30 oil in high temperature, high load applications. Using multigrade oil may increase oil consumption.

FOR WINTER (BELOW 32°F) USE SAE 5W30 OIL.
(SAE 10W is an acceptable substitute.)

(BELOW 0°F ONLY): SAE 0W30 OIL is an acceptable substitute.

NOTE: For severe, prolonged winter operation of HH120 model, SAE 10W oil is recommended.

DO NOT USE SAE 10W40 OIL.

OIL SUMP CAPACITY: 52 ounces (3-1/4 U.S. pints) 1.5 liters

② A FRESH, CLEAN, UNLEADED REGULAR AUTOMOTIVE GASOLINE. (Leaded "Regular" grade gasoline is an acceptable substitute).

NOTE: DO NOT USE GASOLINE CONTAINING METHANOL (WOOD ALCOHOL). Gasoline containing up to 10% ethanol or grain alcohol ("Gasohol") may be used but requires special care when engine is unused for extended periods.

See "STORAGE" instructions on Page 5.

NOTE: Use clean oil and fuel and store in approved, clean, covered containers. Use clean fill funnels.

Never use "stale" gasoline left over from last season or stored for long periods.

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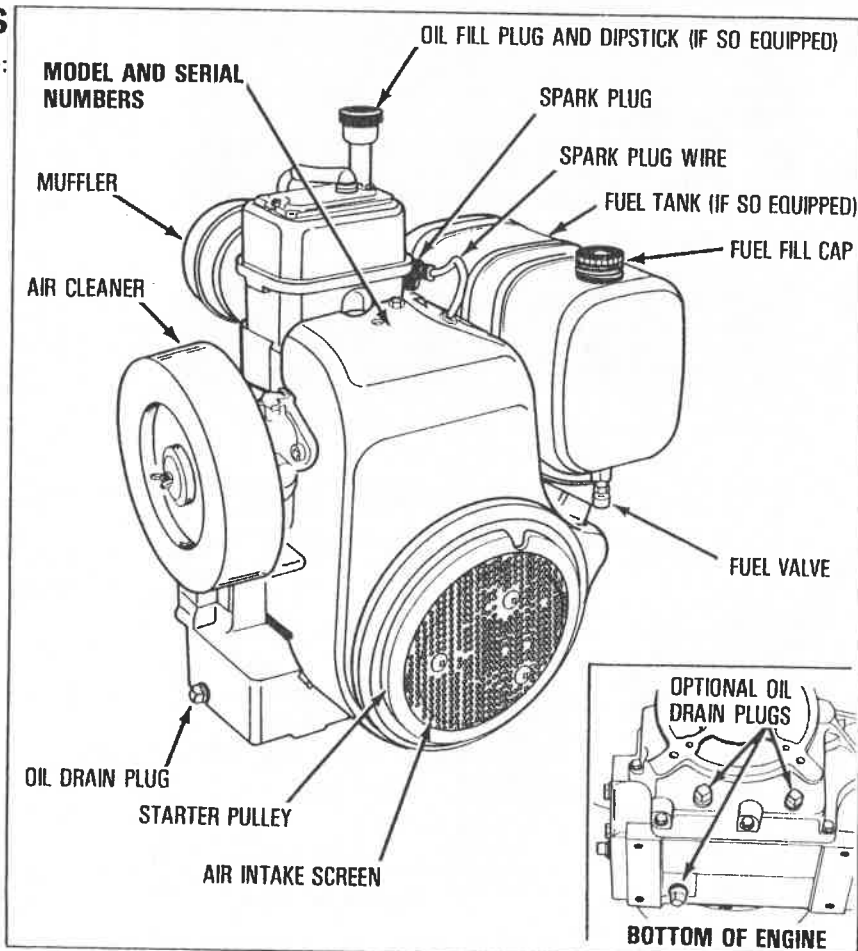


Figure 1

BEFORE STARTING

- 1 READ ALL INSTRUCTIONS PROVIDED WITH THE EQUIPMENT ON WHICH THIS ENGINE IS USED.

- 2 **FILL OIL SUMP OR CHECK OIL LEVEL:**

IMPORTANT: To avoid engine damage never run engine unless:

- Oil level is between "FULL" and "ADD" marks on dipstick.
- Oil fill plug is tightened securely into oil fill tube or hole.

CHECK OIL LEVEL OFTEN DURING ENGINE BREAK-IN.

A. POSITION EQUIPMENT SO ENGINE IS LEVEL.

B. Clean area around oil fill plug (see Figure 1).

C. Remove oil fill plug and dipstick.

D. Wipe dipstick clean, insert it into oil fill hole and tighten securely, remove dipstick. If oil is not up to "FULL" mark on dipstick, add recommended oil. POUR SLOWLY. Wipe dipstick clean each time oil level is checked.

IMPORTANT: DO NOT FILL ABOVE "FULL" MARK ON DIPSTICK.

E. Install oil fill plug and dipstick, tighten securely.

See "MAINTENANCE" section for further oil instructions.

- 3 **FUEL FILL TANK:**

A. Clean area around fuel fill cap, remove cap.

B. Add "UNLEADED" regular gasoline, slowly, to fuel tank. Use a funnel to prevent spillage.

IMPORTANT: NEVER MIX OIL WITH GASOLINE

C. Install fuel fill cap and wipe up any spilled gasoline.

NEVER FILL FUEL TANK INDOORS. NEVER FILL FUEL TANK WHEN ENGINE IS RUNNING OR HOT. DO NOT SMOKE WHEN FILLING FUEL TANK.

NEVER FILL FUEL TANK COMPLETELY. FILL TANK TO 1/2" BELOW BOTTOM OF FILLER NECK TO PROVIDE SPACE FOR FUEL EXPANSION. WIPE ANY FUEL SPILLAGE FROM ENGINE AND EQUIPMENT BEFORE STARTING ENGINE.

ANY LIQUIFIED PETROLEUM (LPG) OR NATURAL GAS FUEL SYSTEM MUST BE LEAKPROOF AND MEET ALL APPLICABLE CODES AND REGULATIONS.

- 4 **CHECK THE FOLLOWING:**

1. **BE SURE EQUIPMENT IS IN NEUTRAL GEAR WITH CLUTCHES, BELTS, CHAINS AND SAFETY SWITCHES DISENGAGED. (FOLLOW EQUIPMENT MANUFACTURER'S INSTRUCTIONS.) THIS SHOULD PLACE ANY SAFETY SWITCHES IN SAFE STARTING POSITION.**

B. Be sure spark plug wire is attached to spark plug (see Figure 1).

C. Be sure any ignition switch and/or control lever on engine or equipment is in "ON", "RUN" or "START" position.

D. Be sure fuel valve (if so equipped - see Figure 2) is open.

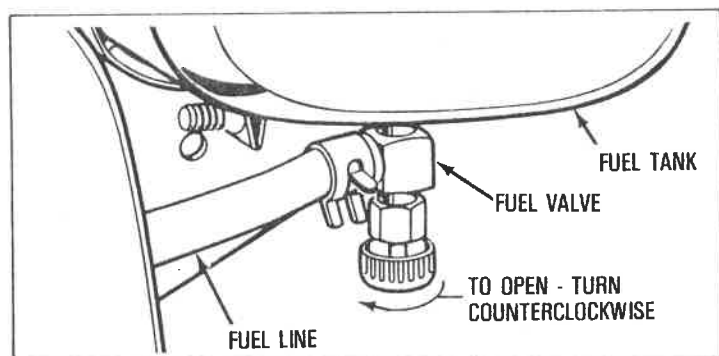


Figure 2

STARTING

NEVER RUN ENGINE INDOORS OR IN ENCLOSED, POORLY VENTILATED AREAS. ENGINE EXHAUST CONTAINS CARBON MONOXIDE, AN ODORLESS AND DEADLY GAS (CARBON MONOXIDE IS ALSO PRESENT IN ENGINE EXHAUST FROM LIQUID PETROLEUM (LPG) AND NATURAL GAS FUEL SYSTEMS).

KEEP HANDS, FEET, HAIR AND LOOSE CLOTHING AWAY FROM ANY MOVING PARTS ON ENGINE AND EQUIPMENT.

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

- 1 **ELECTRIC STARTER** (see Figure 3):

A. Move choke lever (see Figure 4) to "FULL CHOKE POSITION".

NOTE: IF RESTARTING A WARM ENGINE AFTER A SHORT SHUTDOWN, MOVE CHOKE LEVER TO "NO CHOKE POSITION."

B. Move equipment control (see manufacturer's instructions) or engine control to "START".

C. Push starter button or turn ignition switch key (see equipment manufacturer's instructions) to crank engine.

D. Crank engine until it fires. When it starts, release starter button or ignition switch key and move choke lever to "1/2 CHOKE" until engine runs smoothly and then to "NO CHOKE POSITION".

If engine falters, move choke lever to "1/2 CHOKE" until engine runs smoothly and then to "NO CHOKE POSITION".

NOTE: If engine fires, but doesn't continue to run, move choke lever to "NO CHOKE POSITION" and crank engine until it starts.

NOTE: If engine again fires, but doesn't continue to run, move choke lever to "FULL CHOKE" and repeat preceding instructions B, C and D until engine starts.

- 2 **RECOIL STARTER** (see Figure 3):

A. Move choke lever (see Figure 4) to "FULL CHOKE POSITION".

NOTE: IF RESTARTING A WARM ENGINE AFTER A SHORT SHUTDOWN, MOVE CHOKE LEVER TO "NO CHOKE POSITION."

B. Move equipment control (see manufacturer's instructions) or engine control to "START".

C. Grasp starter handle (see Figure 3) and pull rope out, slowly, until it pulls harder. Let rope rewind slowly. Then pull rope with a rapid full arm stroke. Let rope return to starter slowly.

D. When engine starts, move choke lever to "1/2 CHOKE" until engine runs smoothly and then to "NO CHOKE POSITION".

If engine falters, move choke lever to "1/2 CHOKE" until engine runs smoothly and then to "NO CHOKE POSITION".

NOTE: If engine fails to start after three (3) pulls, move choke lever to "NO CHOKE POSITION" and pull starter rope again.

NOTE: If engine fires, but doesn't continue to run, move choke lever to "FULL CHOKE" and repeat preceding instructions B, C, and D until engine starts.

STARTING (Continued)

③ ROPE STARTER (see Figure 3):

- A. Move choke lever (see Figure 4) to "FULL CHOKE POSITION".

NOTE: IF RESTARTING A WARM ENGINE AFTER A SHORT SHUTDOWN, MOVE CHOKE LEVER TO "NO CHOKE POSITION."

- B. Move equipment control (see equipment manufacturer's instructions) or engine control to "START".
- C. Insert rope knot into starter pulley notch (see Figure 3) and wind rope, clockwise, around pulley.
- D. Grasp rope handle and pull rope out, slowly, until it pulls slightly harder.
- E. Rewind any excess rope around starter pulley and pull rope with a rapid full arm stroke.
- F. Repeat instructions C, D and E until engine fires. When engine starts, move choke lever to "1/2 CHOKE" until engine runs smoothly and then to "NO CHOKE POSITION". If engine falters, move choke lever to "1/2 CHOKE" until engine runs smoothly and then to "NO CHOKE POSITION".

NOTE: If engine fires, but doesn't continue to run, move choke lever to "NO CHOKE POSITION" and repeat preceding instructions C, D, E and F.

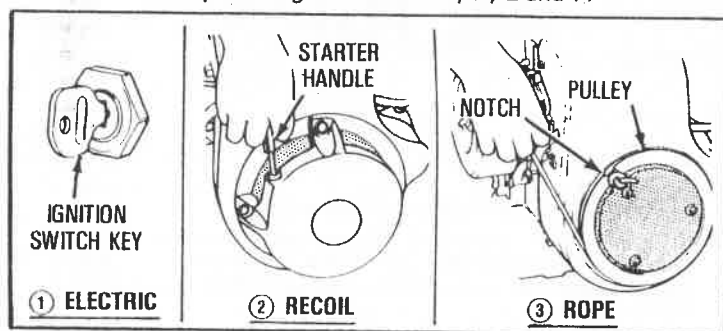


Figure 3

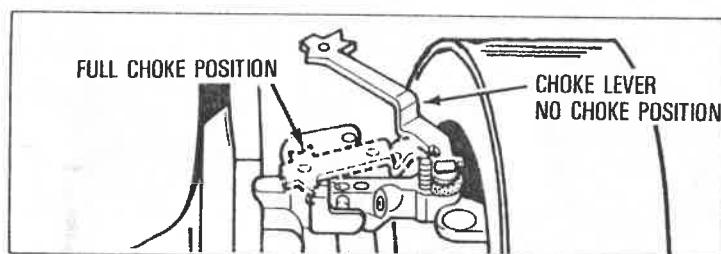


Figure 4

STOPPING

- ① Move equipment control or any ignition stop switch on engine to "STOP" or "OFF" (see equipment manufacturer's instructions).

- ② Push stop switch (if so equipped - see Figure 5) and hold it down until engine is completely stopped.

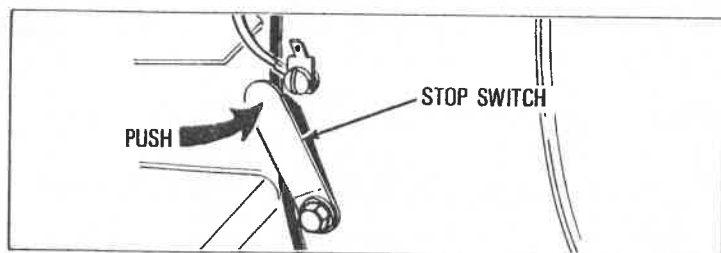


Figure 5

STOPPING (Continued)

③ AFTER ENGINE IS STOPPED:

- A. Close fuel valve (if so equipped - see Figure 2).



- B. **DISCONNECT SPARK PLUG WIRE FROM SPARK PLUG AND KEEP IT AWAY FROM SPARK PLUG.**



- C. **TURN IGNITION SWITCH KEY IF SO EQUIPPED, TO "OFF" POSITION AND REMOVE KEY FROM SWITCH. THIS WILL REDUCE THE POSSIBILITY OF UNAUTHORIZED STARTING OF ENGINE WHILE EQUIPMENT IS NOT IN USE.**



NEVER STORE ENGINE WITH FUEL IN TANK IN DOORS OR IN ENCLOSED, POORLY VENTILATED AREAS, WHERE FUEL FUMES MAY REACH AN OPEN FLAME, SPARK OR PILOT LIGHT AS ON A FURNACE, WATER HEATER, CLOTHES DRYER OR OTHER GAS APPLIANCE.

MAINTENANCE



WARNING — TEMPERATURE OF MUFFLER AND NEAR-BY AREAS MAY EXCEED 150°F (65°C). AVOID THESE AREAS.



OIL LEVEL:

Check oil level every five (5) operating hours and before each use. See "FILL OIL SUMP OR CHECK OIL LEVEL" on Page 2.



CHANGE OIL:

Change oil after first two (2) operating hours and every twenty-five (25) operating hours thereafter, more often if operated in extremely dusty or dirty conditions. Change oil while engine is still warm from recent running.



- A. **DISCONNECT SPARK PLUG WIRE FROM SPARK PLUG AND KEEP IT AWAY FROM SPARK PLUG.**

- B. Clean area around oil drain plug.
- C. Position equipment so engine oil drain plug is lowest point on engine.
- D. Remove oil drain plug and oil fill plug to drain oil.
- E. Install oil drain plug and tighten securely.
- F. Fill oil sump with recommended oil. See "OIL & FUEL RECOMMENDATIONS" on Page 1 and "FILL OIL SUMP OR CHECK OIL LEVEL" on Page 2.
- G. Install oil fill plug and tighten securely.
- H. Wipe up any spilled oil.

MAINTENANCE (Continued)

3 AIR CLEANER:

IMPORTANT: NEVER RUN ENGINE WITHOUT COMPLETE AIR CLEANER INSTALLED ON ENGINE.

A. TO SERVICE FILTER(S) (see Figure 6 or 7):

1. FOAM FILTER:

Clean and re-oil every three (3) months or every 25 operating hours. Clean and re-oil daily if used in extremely dusty conditions.

- Wash in water and detergent solution and squeeze (don't twist) until all dirt is removed.
- Rinse thoroughly in clear water.
- Wrap in a clean cloth and squeeze (don't twist) until completely dry.
- Saturate with engine oil and squeeze (don't twist) to distribute oil and remove excess oil.

2. PAPER OR FOAM/SCREEN FILTERS:

DO NOT ATTEMPT TO CLEAN OR OIL FILTER.

Replace once a year or every 100 operating hours, more often if used in extremely dusty conditions.

Replacement filters are available at any Authorized Tecumseh Service Outlet.

B. TO REMOVE AND INSTALL FILTER(S):

AIR CLEANER A (see Figure 6):

- Remove wing nut, cover and paper filter. Discard paper filter.
- Clean inside of base and cover thoroughly.
- Install new paper filter and replace cover and wing nut. Make sure paper filter is seated correctly between base and cover. Tighten wing nut securely.

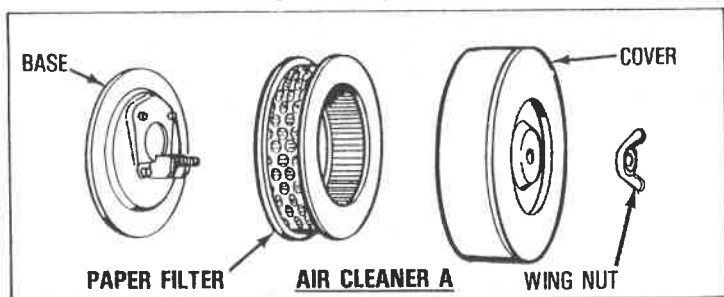


Figure 6

AIR CLEANER B (see Figure 7):

- Remove wing nut and cover.
- Slide foam filter off paper filter.
- Inspect filters for discoloration or dirt accumulation. If either is present, service per preceding "TO SERVICE FILTER(S)" instructions.
- Remove paper filter (if service is necessary).
- Clean topside of base and inside of cover thoroughly.
- Install paper filter.
- Slide foam filter over paper filter.
- Install cover and wing nut. Tighten wing nut.

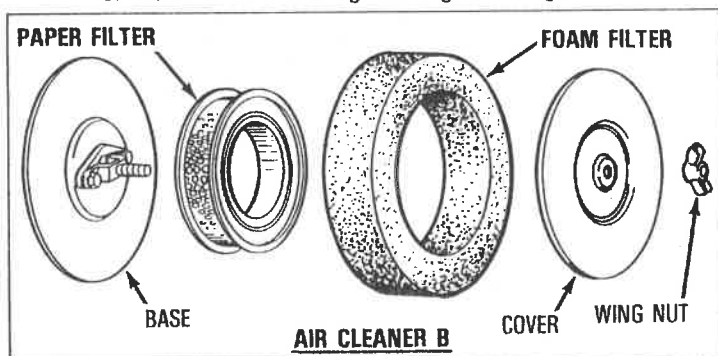


Figure 7

MAINTENANCE (Continued)

4 SPARK PLUG (see Figure 8):

Check spark plug yearly or every 100 operating hours.

A. Clean area around spark plug.

B. Remove and inspect spark plug.

C. Replace spark plug if electrodes are pitted, burned or porcelain is cracked. Replace as follows:

For HH100 and HH120 use Champion J-8C, Autolite 356 or equivalent.

For OH120, OH140 and OH160 use Champion L-82C, L-85 or equivalent.

For OH180 use Champion N-4C, N-4 or equivalent.

NOTE: In Canada, replace spark plug with a resistor plug.

D. Check electrode gap with wire feeler gauge and set gap at .030 if necessary.

E. Install spark plug, tighten securely.

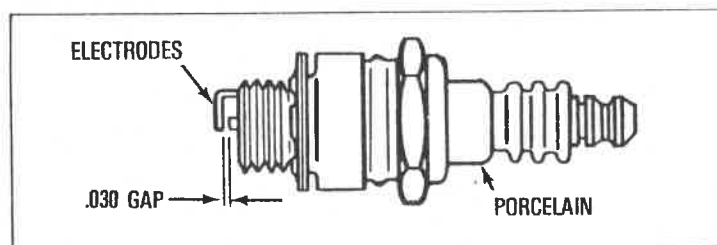


Figure 8

5 COOLING SYSTEM (see Figure 9):

IMPORTANT: Frequently remove grass clippings, dirt and debris from cooling fins, air intake screen and levers and linkage. This will help ensure adequate cooling and correct engine speed.

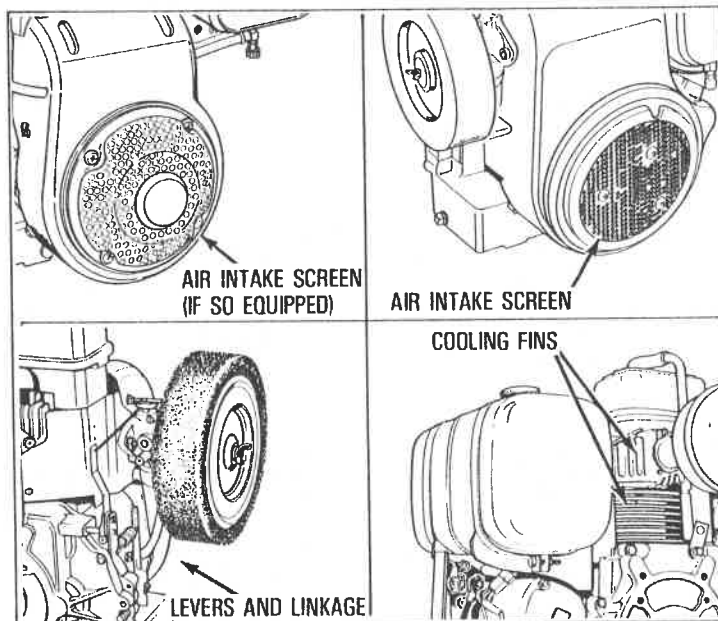


Figure 9

MAINTENANCE (Continued)

⑥ ALTERNATOR AND BATTERY (if so equipped):

A. ALTERNATOR:

For electrical problems such as inoperative starter or discharged battery see equipment manufacturer's instructions for fuse replacement (if so equipped), maintenance and repairs.

B. BATTERY:

1. When servicing battery, always connect cables to battery exactly as they were before removal (ground cable to battery negative [- or neg.] post). If incorrectly connected, fuse (if so equipped) will blow and alternator won't charge battery. If this happens, connect cables correctly and replace fuse.
2. Never expose engine ignition system to battery power. If battery cable or any live wire contacts ignition system ground wire, engine ignition system may be damaged.
3. If external battery charger is used, disconnect positive (+ or pos.) cable from battery to prevent possible damage.
4. See battery manufacturer's instructions for service and storage.

⑦ CHECK ENGINE AND EQUIPMENT OFTEN FOR LOOSE NUTS, BOLTS AND ATTACHMENTS AND KEEP THESE ITEMS TIGHTENED.

ADJUSTMENTS

DO NOT MAKE UNNECESSARY ADJUSTMENTS. FACTORY SETTINGS ARE SATISFACTORY FOR MOST CONDITIONS. IF ADJUSTMENTS ARE NEEDED, PROCEED AS FOLLOWS:

① CARBURETOR:

If you think your carburetor needs adjusting, see your nearest AUTHORIZED TECUMSEH SERVICE OUTLET.

Engine performance may be affected in altitudes above 4,000 feet. To improve engine performance, install a High Altitude Adjustment Kit. To obtain a kit, see your nearest AUTHORIZED TECUMSEH SERVICE OUTLET.

② ENGINE SPEED:

NEVER TAMPER WITH ENGINE GOVERNOR WHICH IS FACTORY SET FOR PROPER ENGINE SPEED. OVERSPEEDING ENGINE ABOVE FACTORY HIGH SPEED SETTING CAN BE DANGEROUS.

CHANGING OF ENGINE GOVERNED SPEED WILL VOID ENGINE WARRANTY.

For engine adjustments and/or repairs not covered in this "OWNER'S MANUAL" see "WARRANTY & REPAIR" on Page 6.

STORAGE



NEVER STORE ENGINE WITH FUEL IN TANK INDOORS OR IN ENCLOSED, POORLY VENTILATED AREAS, WHERE FUEL FUMES MAY REACH AN OPEN FLAME, SPARK OR PILOT LIGHT AS ON A FURNACE, WATER HEATER, CLOTHES DRYER OR OTHER GAS APPLIANCE.

IF ENGINE IS TO BE UNUSED FOR 30 DAYS OR MORE, PREPARE AS FOLLOWS:

① FUEL SYSTEM:

Remove all gasoline from carburetor and fuel tank to prevent gum deposits from forming on these parts and causing possible malfunction of engine.



DRAIN FUEL INTO APPROVED CONTAINER OUTDOORS, AWAY FROM OPEN FLAME.

Run engine until fuel tank is empty and engine stops due to lack of fuel.

NOTE: If "Gasohol" has been used, complete above instructions and then put 1/2 pint of "Unleaded" (or leaded regular) gasoline into fuel tank and repeat above instructions.

NOTE: Fuel stabilizer (such as STA-BIL) is an acceptable alternative in minimizing the formation of fuel gum deposits during storage. Add stabilizer to gasoline in fuel tank or storage container. Always follow mix ratio found on stabilizer container. Run engine at least 10 minutes after adding stabilizer to allow it to reach carburetor.

② CHANGE OIL:

If oil has not been changed recently, this may be a good time to do it. See "② CHANGE OIL" instructions in "MAINTENANCE" section.

③ OIL CYLINDER BORE:

- A. Remove spark plug and pour one (1) oz. (30 ml) of clean engine oil into spark plug hole.
- B. Cover spark plug hole with a rag.
- C. Crank engine over, slowly, several times.



AVOID SPRAY FROM SPARK PLUG HOLE WHEN CRANKING ENGINE OVER SLOWLY.

- D. Install spark plug. Do not connect spark plug wire.

④ CLEAN ENGINE:

Remove and clippings, dirt, or chaff from exterior of engine.

⑤ BATTERY (if so equipped):

See equipment manufacturer's instructions for proper storage of battery.

WARRANTY AND REPAIR



For engine adjustments, repairs, or warranty service not covered in this manual, contact your nearest AUTHORIZED TECUMSEH SERVICE OUTLET. It is listed in your telephone book yellow pages under "Engines, Gasoline."

If you have a general understanding of internal combustion engines and wish to repair and service your engine yourself, a "MECHANICS HANDBOOK" which covers repairs and adjustments not covered in this OWNER'S MANUAL is available from your AUTHORIZED TECUMSEH SERVICE OUTLET. Order as Part No. 691462A.



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

LIMITED WARRANTIES FOR NEW TECUMSEH ENGINES AND ELECTRONIC IGNITION MODULES

A. PRODUCTS WARRANTED

Tecumseh Products Company, without charge for parts or labor only, will at its option either repair or replace any part of any new Tecumseh engine, except as noted below, which is found, upon examination by any Tecumseh Authorized Service Outlet or by Tecumseh's factory in Grafton, Wisconsin, to be DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP and which is received for such examination by Tecumseh or a Tecumseh Authorized Service Outlet within TWO (2) YEARS from the date of sale to the original purchaser of such engine. This coverage includes all snowblower application engines.

The warranty administration procedure described above also shall apply to all other new Tecumseh engines except that the warranty period shall be ONE (1) YEAR from date of sale to original purchaser for new, non-snowblower applied Tecumseh Model AV, AH, TC, TCH, LAV, H, HS and HM engines, NINETY (90) DAYS from date of sale to original purchaser for new Tecumseh engines used on TWO WHEEL VEHICLES (including, but not limited to, mini bikes, trail bikes and scooters), and FIVE (5) YEARS (parts and labor only) PLUS AN ADDITIONAL FIVE (5) YEARS (parts only) from date of sale to original purchaser for new Tecumseh ELECTRONIC IGNITION MODULES used ON CAST IRON, SNOW KING or XL ENGINES.

B. PRODUCTS AND ITEMS NOT WARRANTED

- Engines or parts used in competitive racing or on commercial or rental tracks.
This warranty does not cover any Tecumseh engine or part(s) thereof used to power any vehicle in competitive racing and/or used on any commercial or rental track.
- Engines or parts not manufactured or sold new by Tecumseh.
This warranty does not cover any engine or part thereof which was not manufactured or sold, as new, by Tecumseh to the original purchaser.
- Alterations or modifications of new Tecumseh engines or parts.
All obligations under this warranty shall be terminated if the new Tecumseh engine or part thereof is altered or modified in any way.
- Accidents, normal maintenance, failure to follow the original equipment manufacturer's manual.
This warranty covers only new Tecumseh engines and parts thereof which are found upon examination by Tecumseh to be defective in material or workmanship as delivered to the original purchaser. This warranty does not cover defects caused by depreciation or damage caused 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 Tecumseh engine or part. The cost of normal maintenance and replacement of service items which are not defective shall be paid for by the original purchaser.

C. SECURING WARRANTY SERVICE

Warranty service can be arranged for by contacting either a Tecumseh Authorized Service Outlet (any Tecumseh Registered Service Dealer, Tecumseh Authorized Service Distributor, or Tecumseh Central Warehouse Distributor) or by contacting Tecumseh, c/o Service Manager, Engine and Transmission Group Service Division, 900 North Street, Grafton, Wisconsin 53024. Warranty service can only be performed by a Tecumseh Authorized Service Outlet or by Tecumseh at its factory in Grafton, Wisconsin. 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.

D. LIMITATION OF DAMAGES AND IMPLIED WARRANTIES

The foregoing EXPRESSED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. Neither Tecumseh 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 MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT THAT EITHER MAY APPLY TO ANY TECUMSEH ENGINE OR PART(S) THEREOF, SHALL BE LIMITED IN DURATION TO THE PERIODS OF THE EXPRESSED WARRANTIES DEFINED IN PARAGRAPH A HEREOF. IN NO EVENT WILL TECUMSEH BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES AND/OR EXPENSES. 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 exclusions(s) may not apply to you. This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

E. NO DEALER WARRANTY

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

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TECUMSEH PRODUCTS COMPANY

