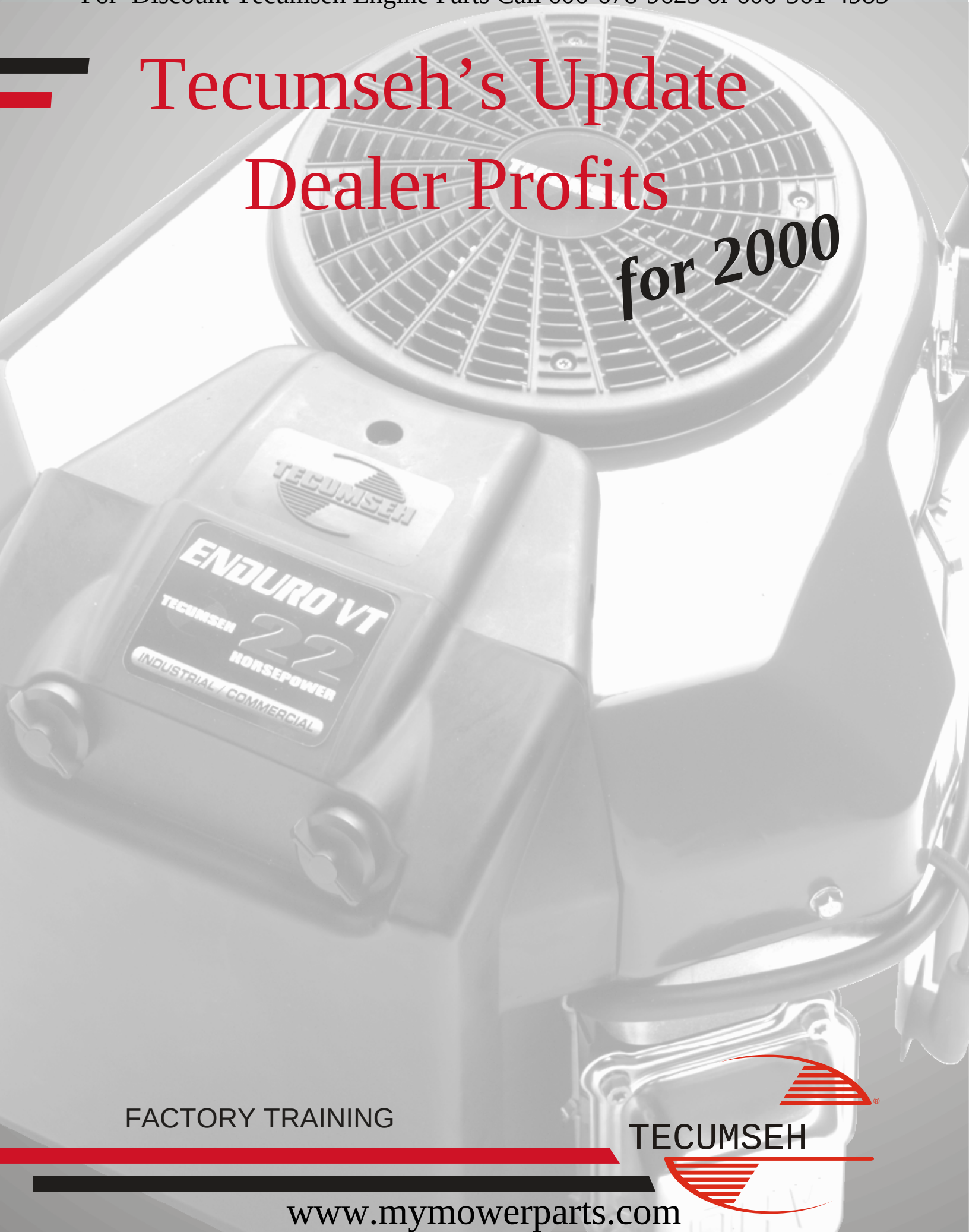
Tecumseh's Update Dealer Profits for 2000



FACTORY TRAINING

TECUMSEH

4-DAY TECHNICIAN EDUCATION PROGRAMS

Tecumseh has been working with our distributor education team to develop a completely updated factory level, school program. This new program has been engineered to meet the needs of today's dealers and the technicians they employ.

On your behalf an extensive commitment has been made by all of us to you, the educational programs offered at the CWD level. Using their facilities, the course is now the equivalent to that of being educated at one of our factory facilities. These extensive hands on programs will be available starting this January, 2000 in the USA and Canada through your regional Tecumseh distributors.

The following program outline will give you a taste of what you can expect from all of these classes. At the end of the 4-Day session, testing will be offered in both the OPE (Outdoor Power Equipment) and TMT (Tecumseh Master Technician) certifications. During the coming months, you will be hearing from your Tecumseh salesperson about the special benefits that are a part of being TMT certified. All certifications stay with the technician and dependent on your level of proficiency should increase your value to the dealership.

Best of all, the course itself may be free or available to you at reduced cost. Your distributor sales person can give you more details regarding this special offer.

Day One Information Retreival Systems Computer, Microfiche and Paper Two Cycle Engine Theory and hands on covering TC and HSK and AV Product	**Day Three** Enduro VT Twin Teardown/ Reasssembly Fuel Systems New Emissions Carburetors Electrical/ChargInG Systems
Day Two 4-Cycle Overview L-Head and Overhead Valve OHH Enduro Teardown/Rebuild and Running Adjustments LEV Teardown/Reassembly	**Day Four** Failure Analysis Warranty Procedures Transaxle Teradown/Reasssembly MST, 800 Series, 900 Series and a VST Overview Re-Powering with Emission Grade Engines

Inside the back cover page we have listed all of the training directors at your regional distributor. These Team Tecumseh educators can supply you with a complete list of classes available to you.

Please contact them directly.

Tecumseh Dealer Profit 2000

As we go into the next Millennium, Tecumseh has been examining how we can be a more integral part of your business and grow our business together. The changes to the market place have caused us to examine both the dealer structure and the training we provide to you. As you will see in the New Dealer structure presented today, we are putting the full financial resources of Tecumseh into this effort. Your attendance at service training programs like this update class and teardown sessions offered regionally are a key part of this.
Effective this year many of our Central Warehouse Distributor training facilities have been upgraded to factory certified facilities. This means that through uniform programs and facilities you get the same high degree of technical training previously reserved for the factory facilities only. This is part of our distributors and Tecumseh's commitment to your business. This will allow you maximum chance at passing the TMT (Tecumseh Master Technician) test.

As part of these yearly sessions we have also decided to begin including Profit making tips so we can all be successful in the new Millennia. Some of you may feel that business tips and facts do not belong in this type of class. We hope that after this session you have changed your mind. It is our intent to get both technicians and owners to review how your business can be Profitable through added shop efficiency.

In this session we will review how either as the owner or technician in a business you effect the future growth. During this years school we have decided to add a few financial tips to your normal program.

How Can I Become A TMT

Tecumseh has begun offering the most in depth Master Technician certification test in our industry. This test is broken into two main sections that cover all areas that are involved in your normal daily repair of our products. The 2.5-Hour test is comprised of the following.

- A 100 question multiple choice, covering Four-cycle, Two-cycle and our Gear Train product.
- Hands on failure analysis of a failed product drawn at random. This could be any of our products.
- Completion of a warranty claim with all parts required for repair. And a decision as to whether the repair is warrantable or filed as disputed. If the unit is warranty you will be responsible to sign the claim in the area previously reserved for distributor representative.
- Once certified you will receive a special code reserved for you alone not a dealership. When you are employed by one of our new Premier dealers you are empowered to authorize Engine, Short Block or Transmission replacements without distributor approval.
- Recertification is required every four years

CONTENTS

REVIEW OF EMISSION STANDARD EFFECTIVE DATES

CARB: August 1, 1995

All Lawn and Garden/Utility Engines less than 25 HP produced for sale into California after August 1, 1995 (D.O.M. of 5213) must be CARB certified and labeled to indicate compliance. There are several applications which utilize engines typically thought to be in this category that are exempt from California regulations because they are considered Farm and/or Construction equipment.

U.S. EPA: (Phase 1) September 1, 1997

All Lawn and Garden/Utility Engines less than 19kw (25 HP) produced after September 1, 1997 (D.O.M. 7244) must be EPA certified and labeled to indicate compliance. All engines used on equipment considered Farm and/or Construction exempt in California must meet EPA requirements.

Our complete snow engine product line will be certified for both CARB and EPA beginning with the 1997 model year.

CALIFORNIA & US EPA EMISSION CONTROL WARRANTY STATEMENT

The U. S. Environmental Protection Agency ("EPA"), the California Air Resources Board ("CARB") and Tecumseh Products Co. are pleased to explain the Federal and California Emission Control Systems Warranty on your new utility or lawn and garden equipment engine. In California, new 1995 and later utility and lawn and garden equipment 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. Tecumseh Products Co. will warrant the emission control system on your utility or lawn and garden equipment engine for the periods of time listed below, provided there has been no abuse, neglect, unapproved modification, or improper maintenance of your utility or lawn and garden equipment engine.

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

Where a warrantable condition exists, Tecumseh Products Co. will repair your utility or 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 Tecumseh Products Co.

OWNER'S WARRANTY RESPONSIBILITIES

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual, but Tecumseh Products Co. 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 Tecumseh Products Co. 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 Tecumseh Authorized Service Outlet (any Tecumseh Registered Service Dealer, Tecumseh Authorized Service Distributor or Tecumseh 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 a Tecumseh Authorized Service Outlet or by contacting Tecumseh Products Co., c/o Service Manager, Engine and Transmission Group Service Division, 900 North Street, Grafton, WI 53024-1499. Telephone 1-262-377-2700, or see your local telephone yellow pages under “Engines, Gasoline” for the name, address and telephone number of a Tecumseh Authorized Service Outlet near you.

IMPORTANT NOTE

This warranty statement explains your rights and obligations under the Emission Control System Warranty (“ECS Warranty”) which is provided to you by Tecumseh Products Co. pursuant to California law. Tecumseh Products Co. also provides to original purchasers of new Tecumseh Products Co. engines. The Tecumseh Products Co. Limited Warranties for New Tecumseh Engine and Electronic Ignition Modules (“Tecumseh Products Co. Warranty”) which is enclosed with all new Tecumseh Products Co. engines on a separate sheet. 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 Tecumseh Products Co. Warranty, the ECS Warranty shall apply except in any circumstances in which the Tecumseh Products Co. Warranty may provide a longer warranty period. Both the ECS Warranty and the Tecumseh Products Co. Warranty describe important rights and obligations with respect to your new engine.

Warranty service can only be performed by a Tecumseh Products Co. Authorized Service Outlet, or by Tecumseh Products Co. at its factory in Grafton, WI. 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 Tecumseh Products Co. at 1-262-377-2700.

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:** Tecumseh Products Co. 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 emissions-related parts on your engine, as follows:

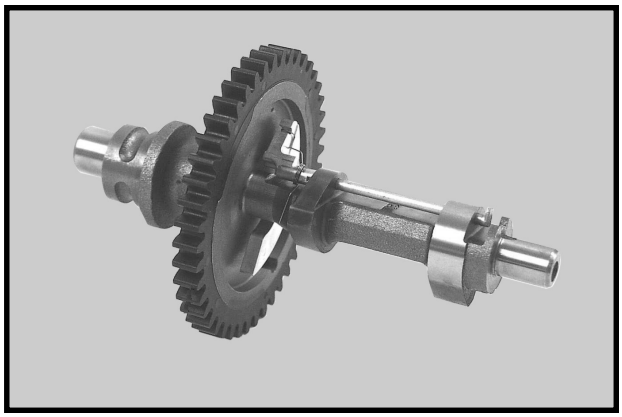
1. Any warranted, emissions-related parts which are not scheduled for replacement as required maintenance in the Owner's Manual shall be warranted for the ECS Warranty Period. If any such part fails during the ECS Warranty Period, it shall be repaired or replaced by Tecumseh Products Co. according to 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 Owner'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 Owner'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 Tecumseh Products Co. 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 Tecumseh 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 Tecumseh Authorized Service Outlet.
6. Tecumseh Products Co. 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, Tecumseh Products Co. shall maintain a supply of warranted emission-related parts sufficient to meet the expected demand for such emission-related parts.
8. Any Tecumseh Products Co. 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 Tecumseh Products Co. ECS Warranty obligations.
9. Unapproved add-on or modified parts may not be used to modify or repair a Tecumseh Products Co. engine. Such use voids this ECS Warranty and shall be sufficient grounds for disallowing an ECS Warranty claim. Tecumseh Products Co. shall not be liable hereunder for failures of any warranted parts of a Tecumseh Products Co. engine caused by the use of such an unapproved add-on or modified part.

EMISSION-RELATED PARTS INCLUDE THE FOLLOWING:

1. Carburetor Assembly and its Internal Components
   a) Fuel filter
   b) Carburetor gaskets
   c) Intake pipe
2. Air Cleaner Assembly
   a) Air filter element
3. Ignition System, including:
   a) Spark plug
   b) Ignition module
   c) Flywheel assembly
4. Catalytic Muffler (if so equipped)
   a) Muffler gasket (if so equipped)
   b) Exhaust manifold (if so equipped)
5. Crankcase Breather Assembly and its Components
   a) Breather connection tube

EXHAUST MCR IS BACK

Tecumseh had initially gone away from offering compression release on the exhaust camshaft lobe due to emission regulations. This change affected the One Pull Starting we have become famous for. Through research and development we have found a way to change back to the exhaust compression release without drastically affecting emissions. This offering will begin with the LEV and OVRM engines and eventually be brought back through-out the entire 4-cycle line.

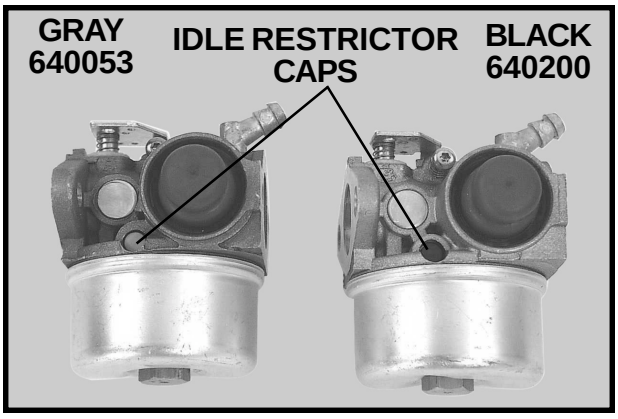


NEW SERIES “11” PRIMER

Over the years we have tried to drive home the practice of always ordering parts by model and specification number. We have also emphasized that primer bulbs are not interchangeable. Here is another example. A new primer bulb, part number **640259** looks like the other red primers used on the Series 8, 9, 10, and 11 carburetors. It is not the same. It has about 30% more volume than other primer bulbs. It will be used on series 11 carburetors for LEV 80,100,115, and OVRM 105, and 120 engines built with the new exhaust valve mechanical compression release or no compression release. This returns Tecumseh to a 3 prime start at temperatures above 55°F (13°C). If the primer bulb is used on the wrong carburetor it could cause a flooded condition, making the engine difficult to start.

SERIES “8” VS “11” EASY ID

Last year Tecumseh Products Co. introduced the revolutionary new Series “11” carburetor. This carburetor adds a fuel chamber, built into the carburetor body that feeds fuel into the venturi of the carburetor during the initial warm up period. This patented feature eliminates, hunting, surging and false starts inherent to emissions engines. However external identification of the Series “11” carburetor has been a challenge. To make this ID simple, the Series “11” carburetor idle restrictor cap will be black, and all others will be gray. The part number for the black cap is **640200** and the gray is **640053**.



COMPOSITE FLOAT

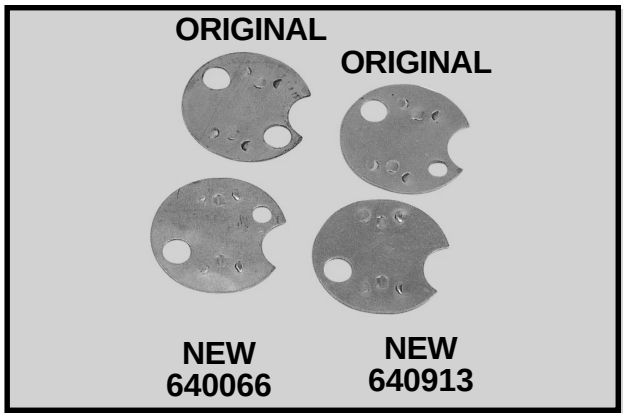
A new adjustable composite float is being used on some applications. Its predecessor the snap-in composite float has now been used successfully on the Vector and Series "7" carburetors for several years. This adjustable version will provide the same reliable consistency as seen on those applications. The float, part number **632765** has a bendable tab like its brass counterpart. The composite float can not be used on applications that require a dampening spring. It must also be used in conjunction with the new style float bowl that has the elongated float rest. Today's fuels will not affect this material.

BOWL CHANGE

After many years of the same reliable fuel bowl, Tecumseh Products Co. has redesigned the old metal fuel bowl. This change was made to allow the bowl to be used with both the brass and composite floats, which have slightly different profiles. It has a raised channel, which is used as a float rest preventing the float from becoming stuck in varnished fuel. The part number is **631951.**

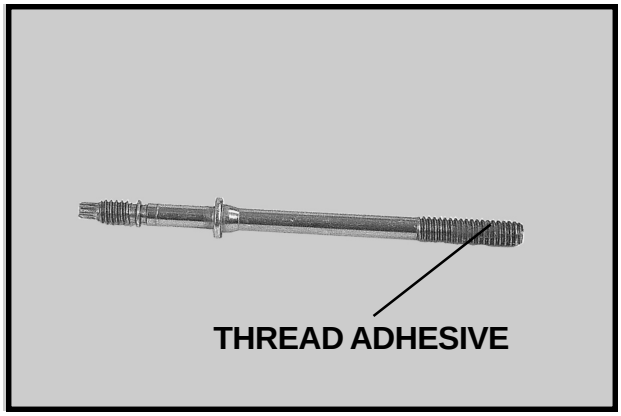
BETTER COLD STARTS

We have received comments from the field regarding poor cold weather starting on recoil starter equipped OHV and "M" series engines. A more aggressive choke plate has been designed to help aid in correcting this situation. The hard start occurs only on engines that use a recoil starter and does not affect electric start models. The part number for this choke plate is **640261** for "M' series engines, **640913** for OHV 11-13 and **640066** for OHV 13.5-17.5. They have been available since October of 1999.



CARBURETOR STUDS NOW HAVE ADHESIVE

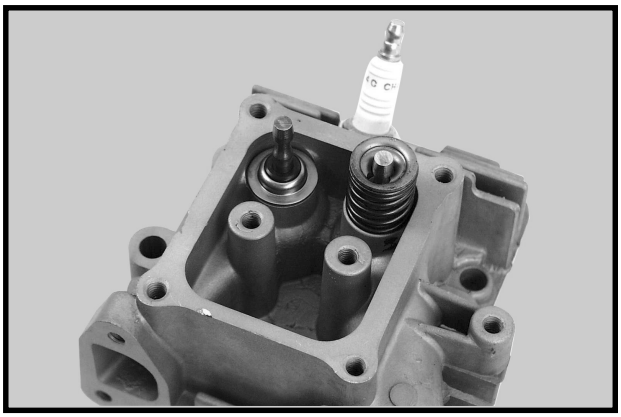
The carburetor studs that fasten the series seven and VLV carburetors to the engine now have a dry adhesive added to the threads of the stud. This was done to assure that the stud does not come loose while servicing the air filter. It is suggested that when servicing these studs, a blue thread locker adhesive be used to secure them to the block. The change occurred in April of 1999.



OVRM / OHH GET VALVE STEM SEAL

Effective October of 1999 cylinder heads of the OVRM and OHH series engines will be machined to accept an intake valve stem seal. This seal will help control the emissions of these engines for Carb Tier II and EPA Phase II regulations. Due to this machining change, the intake valve seals will not retrofit previously built engines. The **40016A** valve stem seal has been in our parts system for several years for use on the VLV series engines.

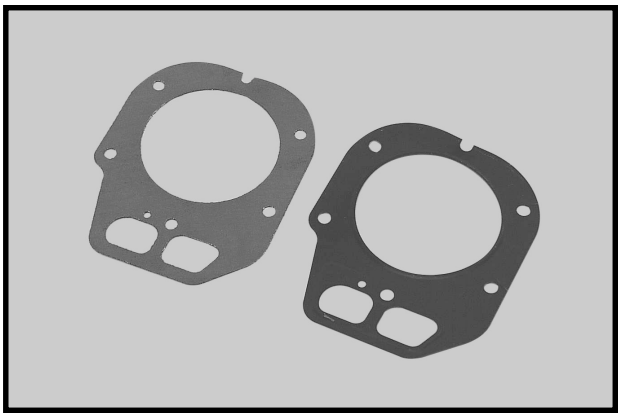
NOTE: In order to maintain emission compliance, valve stem seals must be replaced whenever valve train service is required**.** Also remember to debur the valve stem in the retainer area to prevent seal damage during installation.



NEW OHV HEAD GASKET

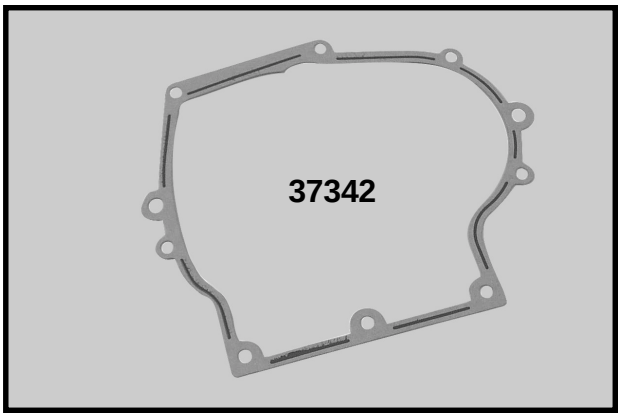
A graphite gasket has been designed to replace the 36337 metal gasket. This gasket is used on the OHV 13.5 through 17.5. The graphite is less sensitive to damage during handling and provides a better seal due to its high density and better thermal properties.

The cylinder head has been machined down to maintain the compression ratio. Therefore the gaskets are not interchangeable.



SILICONE BEAD HM FLANGE GASKET

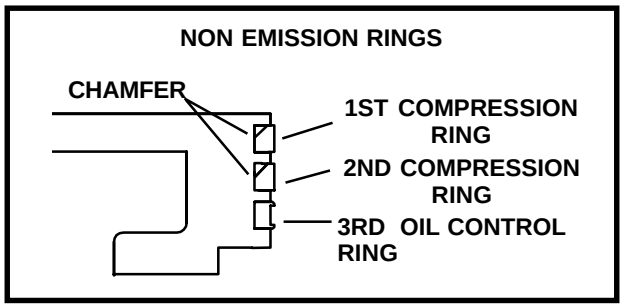
The HM 80/100-flange gasket has been redesigned to include a small bead of silicone to help in sealing. This change will eliminate oil leaks on high load applications such as generators. This gasket is standard on all generator applications beginning in July 1999. The new gasket part number **37342** will also be used as the service replacement part.

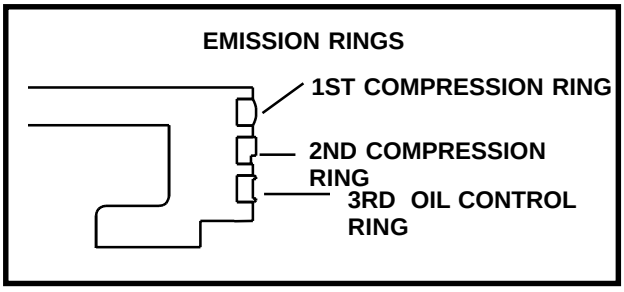


STANDARDIZED RINGS FOR “8” H.P. MEDIUM FRAME ENGINES

The standard non-emissions piston and ring assemblies used on medium frame eight horsepower engines have been made obsolete. They will be superceded to the current emissionized piston/ring assembly; part number **40011**.

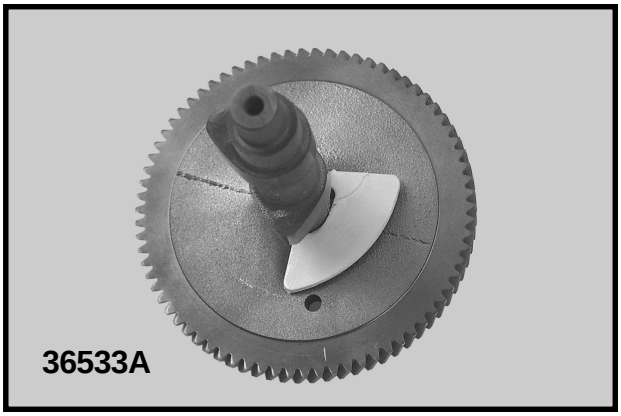
The ring lands on emissions piston/ring assemblies are noticeably narrower than pre-emissions assemblies. The top compression ring on a emissions piston is barrel faced and does not have a chamfered edge. It can be installed in either direction. The second ring is stepped on the outside edge and must face down. The rings are not interchangeable from one style to the other.





NEW MCR FOR OHV 13.5-17.5

A new high-density mechanical compression release yoke has been developed to help strengthen this part of the MCR. Occasionally some distortion of the yoke had occurred rendering the compression release mechanism inoperable. Some of the symptoms caused by this damage are hard starting or slow turnover of the electric starter, if this occurs check the MCR immediately. Dramatic improvement has been seen since this change was made in October 1998. This camshaft assembly part number **36533A** is used on Enduro OHV13.5 - 17.5.



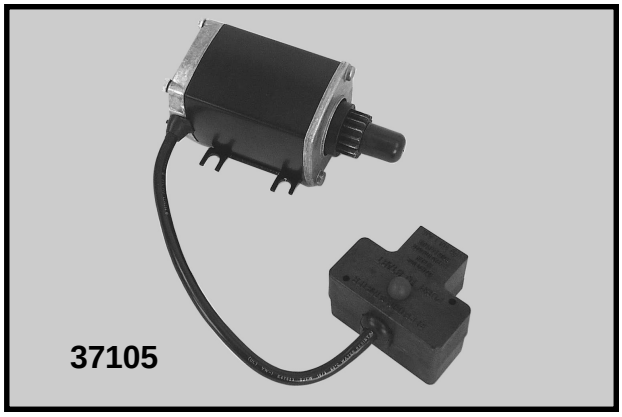
ELECTRIC STARTER CHANGE

The electric starter 36914 used on OHV110 - 135 has been changed to a improved starter, part number 37425. The visual differences between the two are very noticeable. The previous starter mounted via a stamped steel bracket. The new starter mounts using a die cast upper end frame, giving a significant increase in strength. This change took place in July of 1999. The **37425** includes an instruction sheet to assist in making the change.

NEW 120V ELECTRIC STARTER

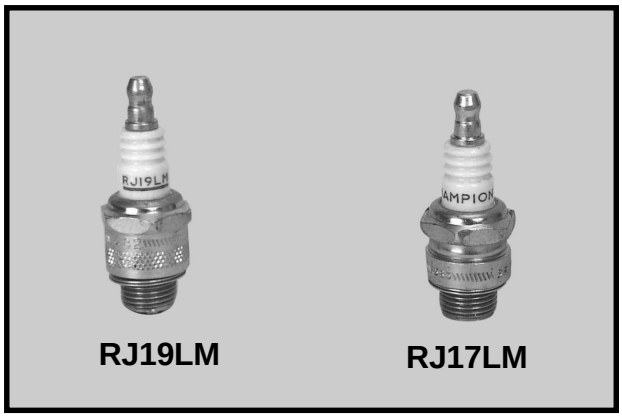
With last years introduction of the re-designed OHM & OHSK 120 – 130, we have developed a high output 120v electric starter to meet the demands of these engines in cold weather starting. The **37105** electric starter looks identical to the 33329E externally but internally has been changed. When installing a new electric starter on a customers Snow King engine which is above 11 Hp remember to use the 37105 starter to ensure trouble-free operation.

Part No.	Description	Models Used ON
33329E	120v Electric Starter	HM,HMSK 70-100 OHSK80-110
37105	120v Electric Starter	OHM & OHSK120-130



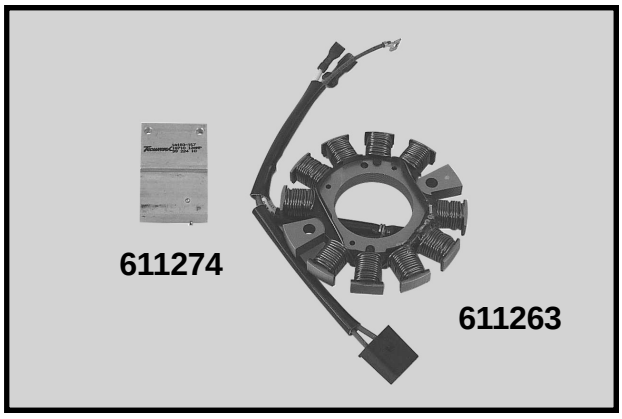
VLV SPARK PLUG CHANGE

To increase the run performance of the VLV series engine, we have made a change to the suggested spark plug used. Beginning October 1999, ALL VLV engines will use the RJ17LM champion spark plug. As the parts information and quick reference guides are updated this change will be reflected. Please make note of this change. When spark plug service is required on any VLV engine use only the Champion RJ17LM.



NEW ALTERNATOR

Tecumseh has developed a new 12 AMP D.C. alternator coil (**611263)** for the OHV and OHM engines. This regulated alternator will supply 12 amps @ 3600. Enough to power electric clutches, lights and maintain a peak battery charge. Since the 12-amp alternator very closely resembles the 16-amp alternator we have visually distinguished the two systems by placing a yellow marking on both the alternator coil and the regulator-rectifier terminal of the 12-amp system. To further aid in the clarification the regulator-rectifier **(611274)** has been stamped on the body with the 12-amp designation.



RE-STYLED 4-QT FUEL TANK

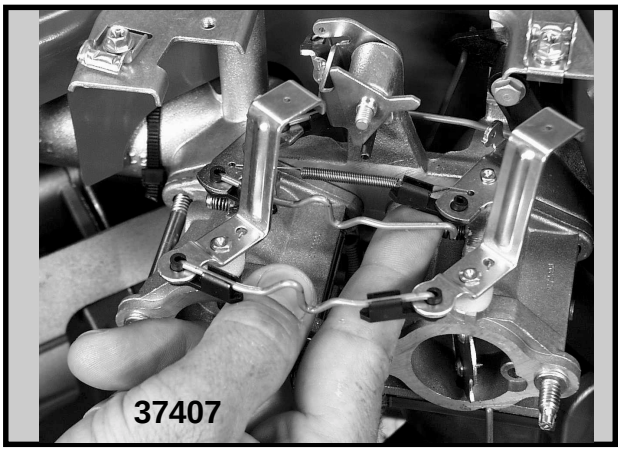
Tecumseh has re-styled the 4-quart fuel tank used on the H / HM / HMSK / OHM and OHSK engines. The new tank incorporates features such as a large fuel inlet for ease of refueling and a spill dam for the occasional overflow. Internal debris screen for cleaner fuel going into the carburetor. And a stylish exterior with the Tecumseh logo embossed into the top of the tank. This restyled tank will help set us apart from the competition, and complete an overall stylish exterior.

ENDURO VT VIDEO

A Video has been produced that provides a complete teardown and reassembly guide for the TVT 691 twin cylinder engine. This video discusses the essential details of the internal workings of the Enduro VT engine. Information such as governor spring hook ups, static governor settings, RPM adjustments and many other details critical to your understanding of this engine are part of this tape. The tape will be included with the update seminar video at no additional charge, or can be ordered separately as part number **696333**. Availability of the video is set for January 2000.

BUSHING CLIPS ON TVT

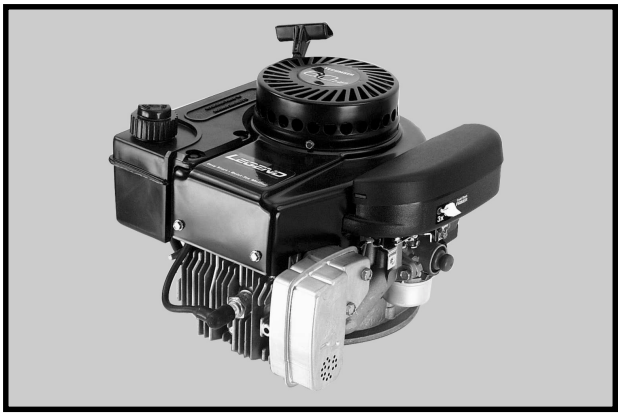
Bushing clips are being used to fasten linkages for the governor and carburetor systems on the TVT engine. These clips help reduce linkage vibration allowing for smother governor operation. They also make access to these systems quick and easy when necessary, and are easily replaced if worn. Stocking of service part number **37407** is suggested. This system is being considered for other engine series.



LEGEND STYLE LEV 120 H.O.

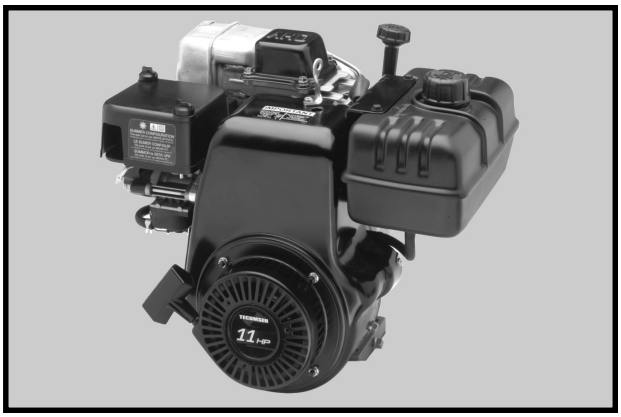
We are pleased to introduce you to the new, largest displacement (12 cubic inch displacement) member of the LEV (lightweight emissionizable vertical) engine family. The H.O. stands for the High Output, and has been developed to meet the customers demands in applications such as pressure washers and generators.

This engine features improvements such as a high flow intake pipe, special port machining, a Series 10 carburetor with choke, new exhaust MCR, a new piston design, ultra quiet muffler, and an improved balance crankshaft.



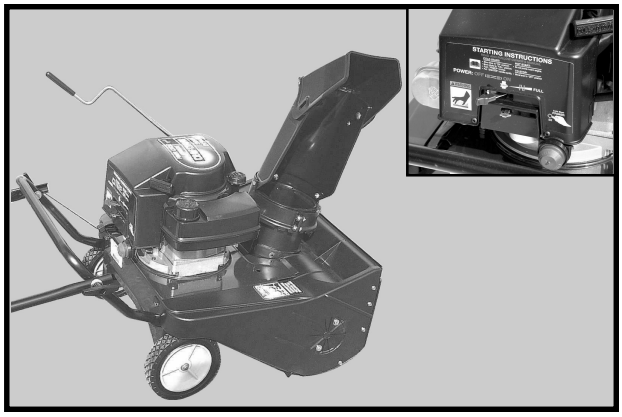
NEW OHM 110

This new engine has been developed to meet the emission standards of tier II all 50-state standards. The engine incorporates the easy service Series "7" carburetor. The engine also incorporates the patented climate Guard™ system introduced on the OHH engines. This feature allows the customer to operate the engine in temperatures down to freezing. With a simple rotation of the filter cover 180°, the passage is blocked and intake air is drawn past the muffler preheating it, preventing freeze up of the closed breather system.



NEW ENGINE MODEL DESIGNATION

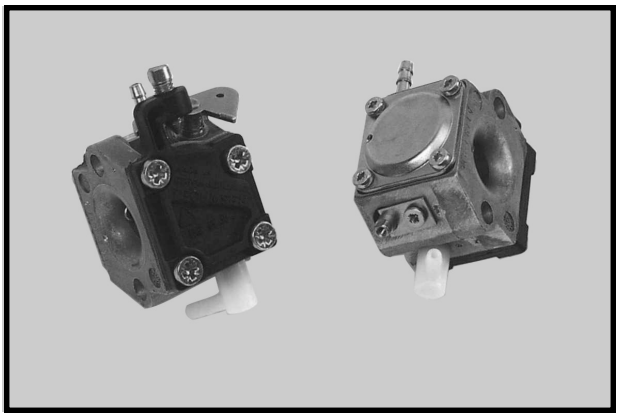
There is a new model being added to the engine family at Tecumseh. It is the VSK 100. The VSK stands for vertical snow king. The introductory model is a 3.8 horsepower engine being used on a single stage snow thrower sold by Sears. This engine incorporates some new component parts not previously seen on vertical shaft engines.



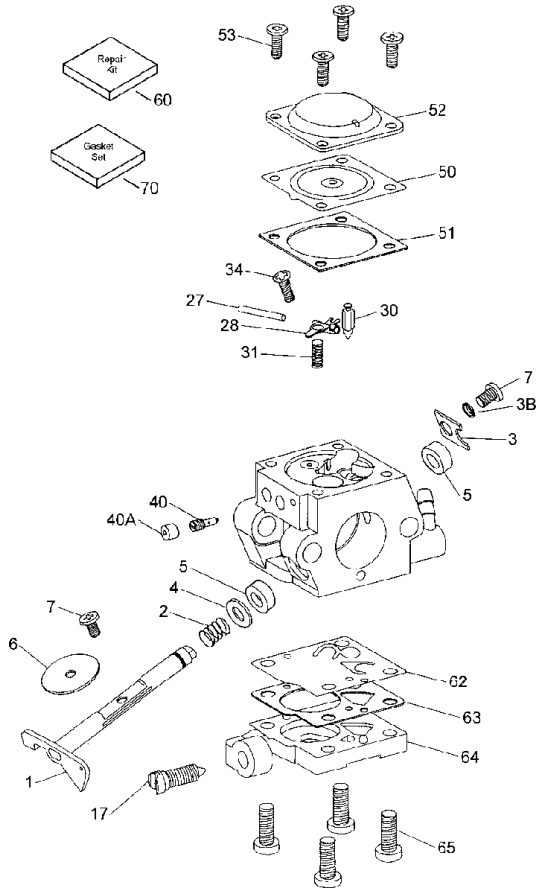
2-CYCLE

TC 300 NEW CARBURETOR

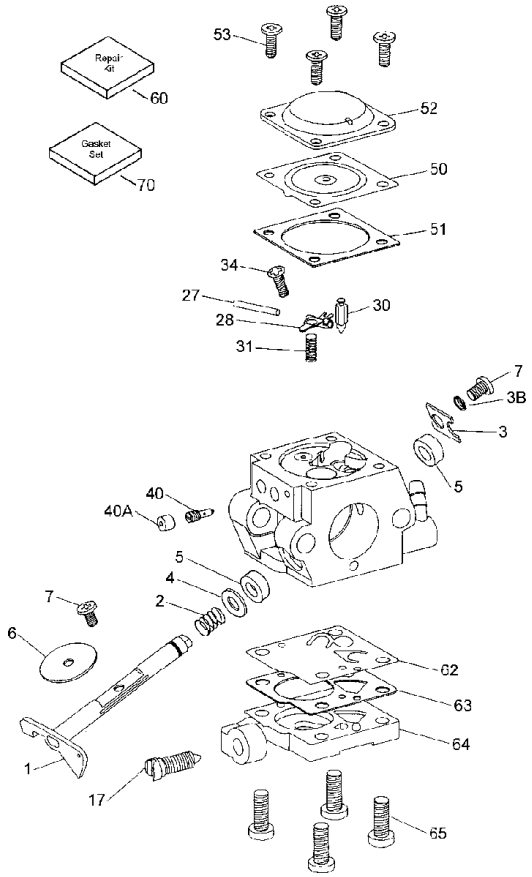
Tecumseh has come up with a diaphragm carburetor of its own for the TC 300, product line. The carburetor has a fixed idle and main which meets the emissions standards for two cycle engines. It currently is available as part numbers **640230** and **640231** and was first used in production in September, 1999. The main jet is serviceable and can be accessed by removing the plastic cap. The jet is removed for cleaning purposes only, and must be covered after servicing to maintain compliance with emissions regulations.



640230



640231



Ref. No.	Part No.	Description
1	640232	Throttle Shaft & Lever Ass'y.
2	640233	Throttle Return Spring
3	640234	Dust Seal Retainer
3B	640236	Spacer
4	640237	Dust Seal Washer
5	640238	Dust Seal
6	640239	Throttle Shutter
7	640235	Screw, Throttle Shutter & Dust Seal Retainer
17	640240	Idle Speed Screw
27	640241	Hinge Pin
28	*640242	Metering Lever
30	*640243	Inlet Needle
31	640244	Metering Lever Spring

Ref. No.	Part No.	Description
34	640245	Screw, Metering Lever Pin
40	640246	High Speed Jet
40A	640247	High Speed Jet Sealer Cap
50	640248	Diaphragm (Included in Gasket Set)
51	640249	Cover Gasket (Included in Gasket Set)
52	640250	Cover
53	640251	Cover Screw
60	640256	Repair kit (Incl. Items Marked *)
62	640252	Pump Diaphragm (Incl. in Gasket Set)
63	640253	Pump Gasket (Included in Gasket Set)
64	640255	Pump Cover
65	640254	Pump Cover Screw
70	*640257	Gasket Set Incl. (1) each of part #'s 640248, 640249, 640252, 640253

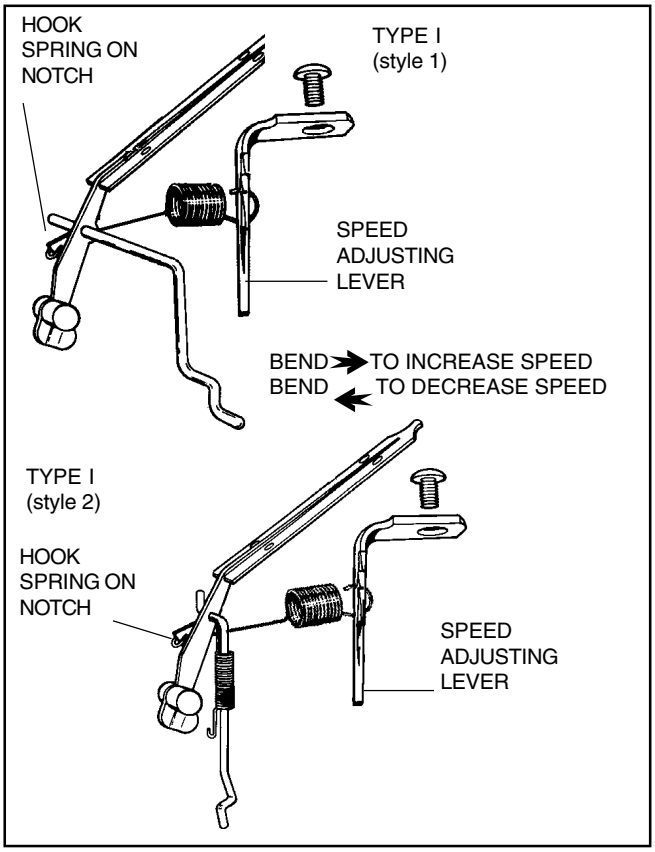
TC GOVERNORS

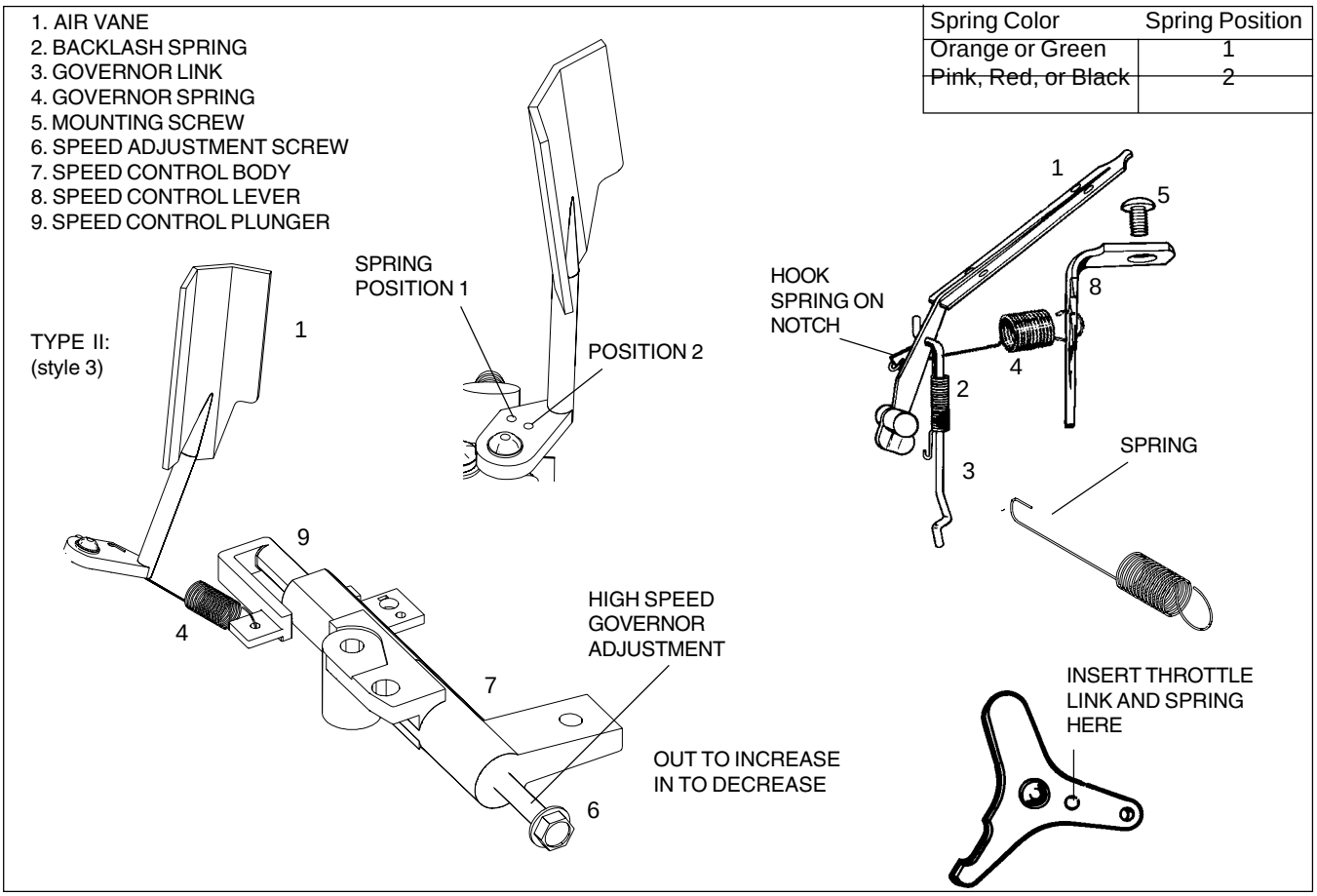
Most of the phone contact received regarding the TC Series engine concerns governor hook-up and/or adjustments. To help with these questions we have included diagrams and instructions for adjustments.

TC SERIES GOVERNOR ADJUSTMENT

Three different styles of governor systems are used on TC engines. Use the following illustrations (diags. 2 and 3) to identify the governor system used and the following procedure to adjust the governed engine speed.

1. Allow the engine to run for at least 5 minutes to reach operating temperature. Make sure the air filter (if equipped) is clean and the choke is in the off position.
2. Using a Vibratach (part# 670156) or other tachometer, determine the engine's R.P.M. at idle and wide open throttle. Consult microfiche card #30, or the computer parts look-up program (Part Smart or Plus One) to obtain the recommended engine speeds.
3. Using the applicable illustration, either bend the speed adjusting lever toward the spark plug end of the engine to decrease high speed R.P.M., or bend the lever in the opposite direction to increase R.P.M. On TC Type II engines, turn the speed adjusting screw out to increase or in to decrease engine high speed R.P.M. If the speed adjustment screw is turned out to increase the engine R.P.M., the speed control lever must be moved to allow the speed control plunger to contact the speed adjustment screw.
4. The low speed is set by moving the throttle control to the lowest speed position and adjusting the low speed adjustment screw on the carburetor.



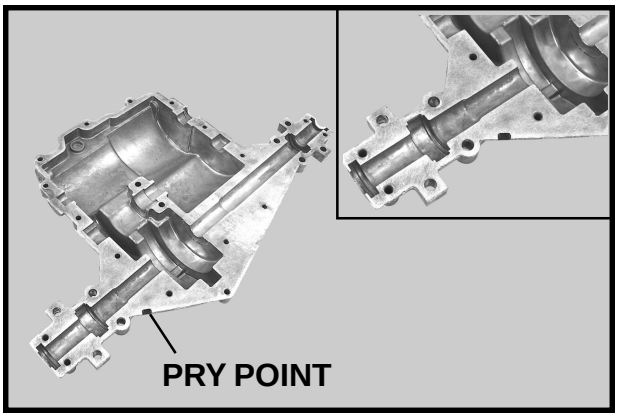


Spring Color	Spring Position
Orange or Green	1
Pink, Red, or Black	2

MST PRY POINTS

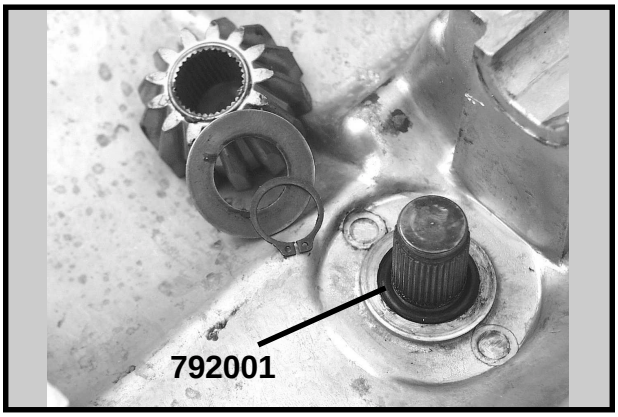
The MST transaxle now has a dedicated pry point between the case and cover to help separate them. The point is located near the differential portion of the transaxle on the short axle side. Silicone sealant is used as a gasket on this transaxle, and makes it difficult to pry them apart. This will help the technician separate the two and prevent damage to the gasket surface. This change which has taken place on a limited number of units since April is set to go across the board beginning October of 1999.

NOTE: Always remember to remove the two (2) bottom case bolts before attempting to separate the case halves.



NEW INPUT SHAFT O-RING ON MST

To increase durability and help prevent contamination, all MST units have been changed to accept an O-ring on the input shaft. The **792001** O-ring is located inside the transaxle cover directly under the lower needle bearing. To make room for the O-ring, the inside needle bearing pocket was recessed, so Upgrades of older units cannot be made because of this change to the cover. This process took effect January of 1999. When servicing the MST series transaxles, always remove the input shaft and inspect the bearings. DO NOT forget to repack the bearings with E.P. grease.

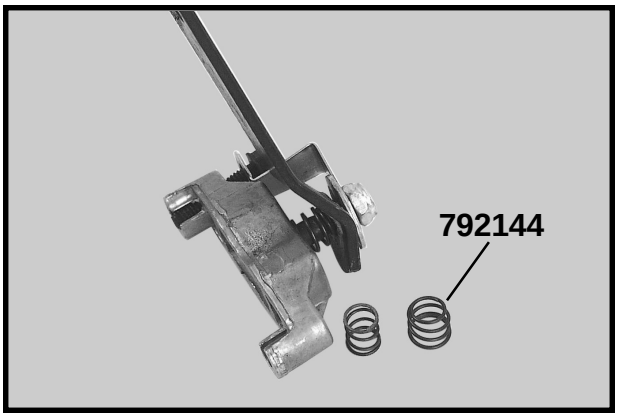


MST / VST BRAKE BOLT CHANGE

The hardened bolts which attach the brake assemblies to the cases have been increased in length from ¼ -20 x 1 ¼" to ¼ - 20 x 1 3/8" The change was made for additional brake retention and reduced bolt stripping. This change only effects the MST and VST product lines. Other model series have not been changed to accept the longer bolt. Order part number **792177** to upgrade.

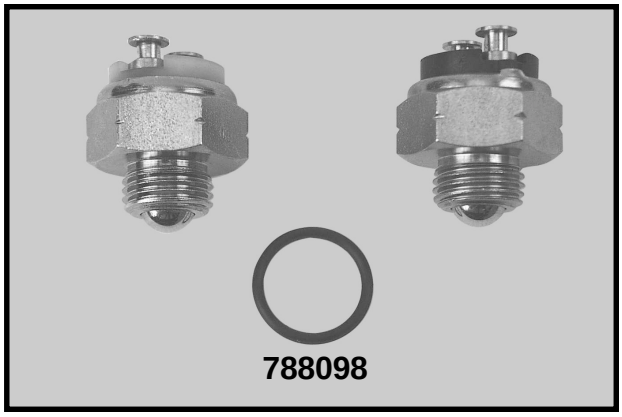
IMPROVED BRAKE SPRING

The brake spring used between the brake housing and the brake lever has been redesigned to help release the brake lever more consistently. The change to part number **792144** took place in July 1999.



STARTING IN NEUTRAL

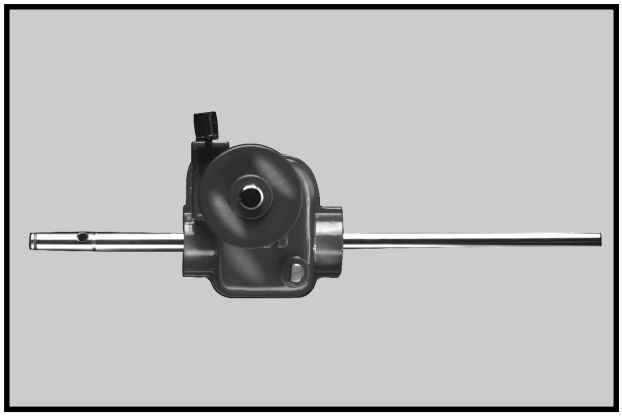
Tecumseh / Peerless® offers a wide selection of Neutral Start Switches for there transmissions products. They differ mostly in the electrical connection hook up or a normally open or closed switch. When ordering a replacement neutral start switch remember to include a **788098** O-ring on all MST models. All greased filled units do not require a O-ring.



NEW TECUMSEH/PEERLESS® MODEL 301

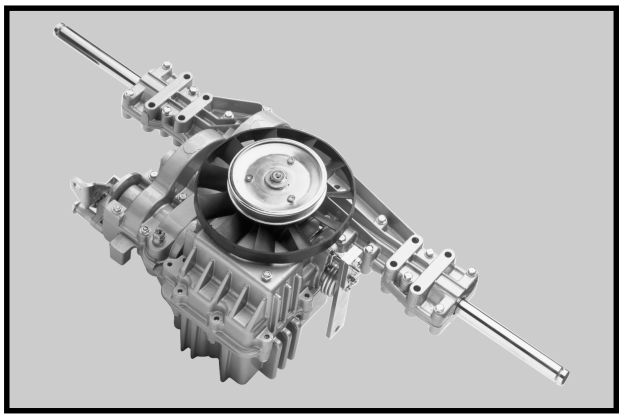
We are excited to expand our role as the world leader in manufacturing engine and gear train products. With this in mind, we have developed a new value packed walk behind mower transmission, the **SilentTrac 301**. The 01 stands for one forward speed and will be used in some rotary mower product you see this coming year.

This unit is clearly identified from other manufacturers models by its unique permanent **Red** colored case and is oil filled. The unit permanently sealed requiring No Maintenance. Service when eventually required is done through replacement as a complete unit.



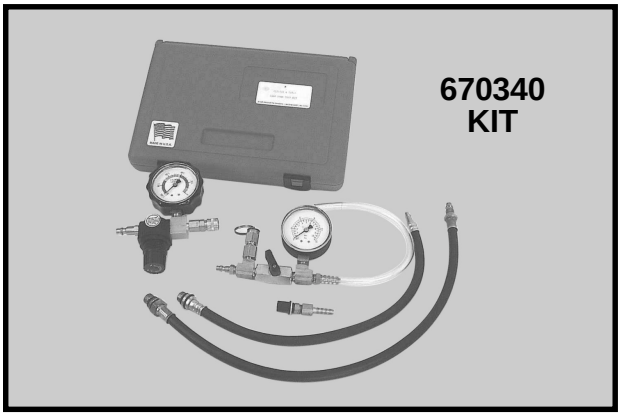
NEW SILENTTRAC™ 200

Tecumseh has been developing a new hydrostatic Transaxle to replace the current VST product. The primary goals were to allow internal service of the output side of the unit, and reduce shift force eliminating the need to perform field adjustments for various customers. The pump/motor portion will be serviced through a core exchange program from your normal distributor. Some other benefits of the new design are reduced noise through separation of the pump/motor from the output drive portion. Regular gear oil and dedicated pry points for convenient case splitting if service is ever needed. This product is currently in its final test stage and is slated for production by September 2000.



LEAK PREVENTION

If a leaking carburetor inlet needle and seat, transaxle case seam or axle seal has ever frustrated you, this tool is for you. The MST series transaxle was our first new model in fifteen years to use 80/90 EP oil instead of grease. When a repair is needed proper resealing is CRITICAL. If you do not pressure test for leaks the unit could slowly run low of oil, causing a total unit failure. This tool makes a low, pressure leak down test quick and easy. Using the tool simple, apply no more than **5 PSI (.25 Bar)** to the unit, turn off the air valve and watch for any pressure drop. I no drop is noted, the unit is ready to be re-installed. Should a drop be noted open the air valve and apply no more than **5 PSI (.35 Bar)** pressure back into the transaxle and brush a soap/ water solution on all the joints and seals to find the trouble spot.

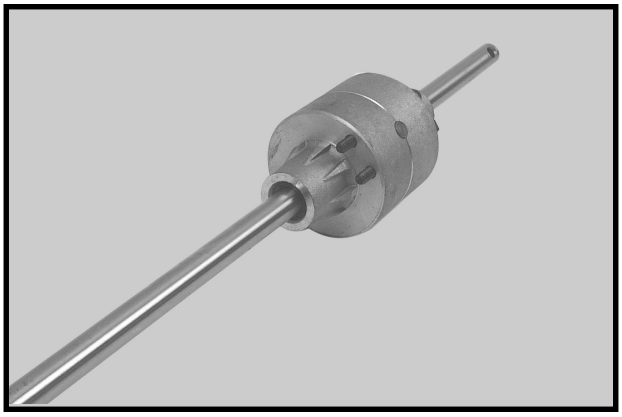


Carburetor Needle and Seat Pop-Off can also be checked with this same low-pressure tool. Simply wet the inlet seat with a drop of oil, and then slowly turn up the primary regulator until the needle pops-off the seat. Then turn off the shut-off valve between the primary regulator and the low pressure gauge. The seat should hold at least 1-1/2 PSI for a minimum of 5 minutes.

Two kits are available the first is a complete kit including the primary regulator, low pressure gauge and all adaptation equipment. This kit is available through your distributor as service part number **670340**. The second kit is designed to be an add-on unit for a standard leak down tester and contains only the low-pressure part of the system. Order service part number **670345** from your distributor.

100 SERIES GET RTV SEALANT

Tecumseh/Peerless® has improved the sealing on all Heavy-Duty 100 Series Differential housings. These models incorporate a spider gear drive pin that extends to the outside edge of the housing for added strength. RTV is now being applied to the housing edge focusing all around the pin area to insure grease retention on these units. Effective immediately we suggest using RTV on All 100 Series differential housing's regardless of specific model.



MISCELLANEOUS PRODUCT NEWS

NEW PARTS AND ENGINE DISPLAY RACKS

Tecumseh is proud to offer two new display racks for next season. One will be for our expanded line of packaged parts, Tire Sealant, Lubricants and Cleaners. The other will be for engines. The new display racks will allow the do it yourself customer to sell himself on these fast moving attractively packaged parts. Contact your distributor sales person for additional information and complete details on the program.

UPDATED PACKAGED PARTS PROGRAM

Tecumseh has extensively reviewed the items offered in the program this year. We have replaced older low volume parts with some new fast moving items. For the first time the items will also be listed in a special section of the price list. You will see this in your next update mailing of the advanced price list. The package parts program can save you and your counter person valuable time looking up parts, and generate increased sales when the customer can visually recognize the part that's needed. Ask your distributor sales person for a complete listing of all the items available in this program.

TECUMSEH CLEANERS AND LUBRICANTS

Tecumseh is pleased to announce and present to you our new line of high performance Lubricants and cleaners. These products are designed for use in the shop as well as for retail sales. The Program gives you a full range of products attractively packaged with a Motorsports theme. Ask your Distributor for information on our introductory packages and programs.

all cases are 12 cans per case
* 32 oz. Liquid, 14oz. aerosol

Product Description	Part	UPC#
Battery Protector, Case	696407	00202
Battery Neutralizer, Case*	696417	00213
H/D Parts Cleaner, Case*	696408	00203
Hand Cleaner, Case*	696411	00206
Lithium Grease, Case	696409	00204
Carburetor Cleaner, Case	696410	00205
Rubber Lube, Case*	696418	00214
Penetrating Oil, Case	696412	00207
Dry Teflon Lubricant, Case	696413	00208
Contact Cleaner, Case	696414	00209
Aerosol Degreaser, Case	696415	00210
Spray Teflon Grease, Case	696416	00212

NOT JUST ANOTHER SEALANT

Tecumseh is please to introduce to you our new line of Tecumseh tire sealant. We are not just selling another tire sealant. We have worked with our supplier to create a unique profit building opportunity for your business. A dealer installed **Flat Tire Prevention Program.** This is a lifetime flat tire protection program that the dealer can offer to homeowners and commercial customers. Should a tire go flat after the sealant is installed the program would reimburse the dealer for the parts and labor, it takes to make the repair, including a service call if needed. Claims are submitted directly to Tecumseh assuring your business of prompt re-imbursement. Ask your distributor sales person for complete detail on the program.

Product Description	Part #	UPC #
16 ounce bottle, Each	696401	00197
32 ounce bottle, Each	696402	00196
2.5 Gallon Pail	696403	00198
5 Gallon Pail	696404	00199
30 Gallon Drum	696405	00200
55 Gallon Drum	696420	N/A
Transfer Pump	696419	00215
Metered Dispenser	696406	00201

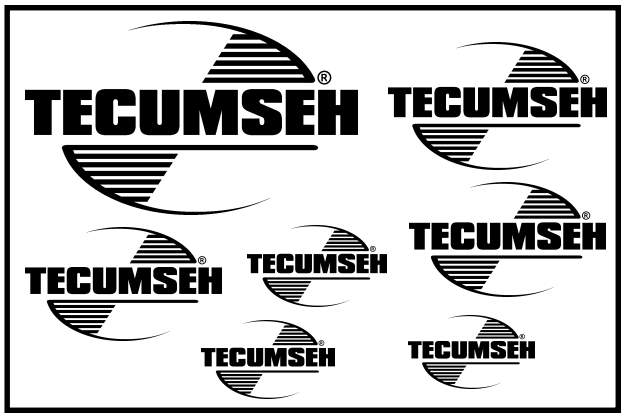
ULTRA FRESH™ GASOLINE PRESERVATIVE

Tecumseh's latest gasoline stabilizer, Ultra-Fresh™, offers more value than traditional liquid fuel additives. Ultra-Fresh™ is non-toxic, non-staining, and non-flammable. Its granular formula dissolves quickly into gasoline and performs better than major brands for up to 24 months. As gasoline turns bad in less than 30 days and sometimes faster (with clear gas tank), it is important to educate the consumer about the benefits of using Ultra-Fresh™. Tecumseh offers multiple merchandising options (see below). At the request of many dealers, we now offer a shop canister that includes its own dispenser. The shop jar treats up to 96 gallons. Treating each customer's engine coming into your shop will keep your customers satisfied while having a safe product in your work area. Ask your distributor sales person about profit opportunities from Ultra-Fresh™.

Merchandising Options	Part #
Counter display consists of 5 g (0.2 oz) packet (each packet treats 2.5 gallons (10 litres of fresh gasoline.	**730255A**
Shop canister	**730260**
3-packet bubble pack (5 card pkg)	**740063**

CAMERA READY EMBLEMS

We have placed a page of camera ready emblems in this book for use by registered dealers in any advertisements you place (see page 40). Please pass this page on to any Companies or Advertising media you are currently using such as Yellow Pages, News Paper etc., This will update their information as we have discontinued use of the Indian Logo. Additional single page copies are available from your distributor sales person.



TECUMSEH LUBRICANTS

With the need for multi-lingual packaging, we have consolidated and changed some of our existing lubricant part numbers. We have also added a number of new product available to the servicing dealer.

OLD NUMBER	Description	New Number
788067B	BENTONITE GREASE	**788067C**
730225F	SAE 30 OIL (32oz)	**730225A**
730226F	SAE 5W30 OIL (32oz)	**730226A**
730238F	SAE 30 OIL (21oz)	**730238A**
730229F	80W90 OIL (32oz)	**730229B**
730227A	2-Cycle OIL (8oz)	**730227B**

TOOL KIT 670195E

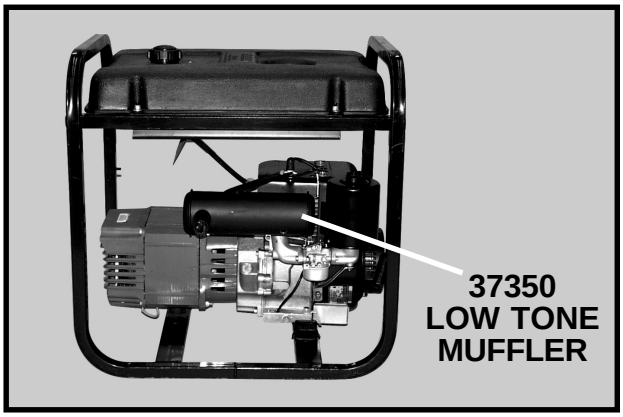
In an effort to help maintain costs Tecumseh has decided to remove a few low usage tools from its basic tool kit. These tools will still remain available by individual order. Removed are the

670237A Cast Iron OH Valve Spring Compressor
670294 AH520 & AH600 Seal Protector & Installer for One Piece Seals
670319 Torx 25 Driver
670327A Seal Protector & Installer (VLV Models)

This effort allows us to continue to offer the service technician the most commonly used specialty tools at an affordable price.

NEW LOW TONE MUFFLER FOR GENERATOR APPLICATIONS

From listening to our customers suggestions Tecumseh has introduced a new Low Tone Muffler for the HM80 thru HM100 engine. The muffler part # **37350** was specifically designed to fit Generators with Extended Run Fuel tanks, but also works great for Logsplitters, Chipper shredders and more. This muffler, maintains emission compliance, contains a USDA approved spark arrestor, and was designed to work with our Climate Guard (730630) conversion kit.



NEW OIL VACUUM SYSTEM

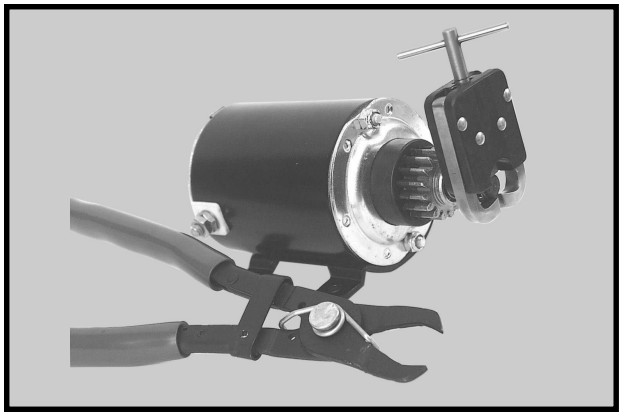
We are very pleased to have exclusive distribution rights for a product that will make changing your customer's oil a snap. This pump eliminates the hassle of finding the drain plug, eliminates spills on your floor and the customer's equipment. To change oil on cold to warm, **NEVER HOT** engine simply put the suction tube into the oil fill hole. The discharge line is then connected to the optional Extremely Heavy Duty Three (3) gallon tank available under Service part number **670367** or your own tank. Next turn the pump on, and in a few short minutes you're done. The pump is available under Tecumseh part number **670354**.

NEW SERVICE TOOLS

To meet world market needs and the request of our customers we have dramatically expanded our service tool offering. These tools are all net priced and available from your Tecumseh distributor. We have placed a complete listing of the items in the back of this book. Watch for your next price update or contact your distributor sales person regarding pricing.

A TOOL THAT REALLY WORKS

After two years of work by one of our tool suppliers, we are pleased to introduce a time and injury saving bendix retainer ring removal tool. This new tool removes not only all Tecumseh retainer rings, but also most others in the industry. And it takes only seconds, The kit includes the retainer ring removal tool and a special retainer ring installation tool. This kit is available from your distributor under service part number **670346**.



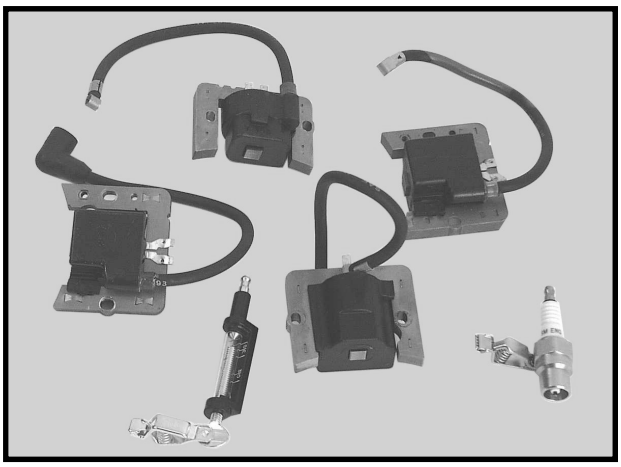
SERVICE TIPS

GOOD BUT WARRANTED SOLID STATES

This past year we have been monitoring our solid state CDI modules replaced under warranty. Through our evaluation of these units both on running engines and test equipment we have discovered that 80% of the modules replaced were in fact, NOT defective. In order to continue with our normal warranty payment process for these parts, we need your assistance in insuring proper diagnostic procedures are followed. Before replacing any solid state CDI module under warranty, check the following by using a standard ignition tester such as our tester service part number **670366**.

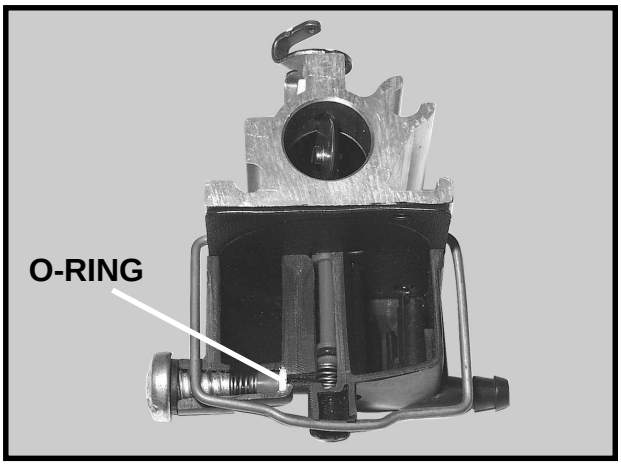
1. Install the spark tester in the wire and ground it to a non-painted surface. Test Spark. If spark is present continue to next step. If spark is lost, continue to step three and repeat.
2. Next connect the tester ground to the spark plug post, and check spark. If spark is lost, replace the plug.
3. Isolate the engine ignition from the equipment's wiring harness. Test Spark, if spark is present review the equipment wiring harness system. No spark continue with the next step.
4. Remove blower housing and disconnect the ground wire at the module. Test spark. If spark is present check for pinched wires or grounded wires at all connection points, including the compliance brake if so equipped. You have a short.

After you have followed the above procedure and no spark is present replace the module.



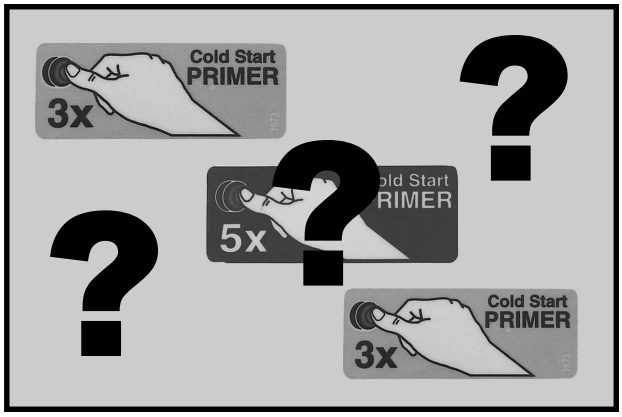
VLV CARBURETOR SERVICE

We continue to here comments from technicians regarding no fuel reaching the venturi even after cleaning the fuel bowl on the VLV engine. During Expo 99 one technician brought us a carburetor to look at. The inspection found they had forgotten to remove the main jet O' ring shown here prior to cleaning. The O' ring swelled when soaked with carburetor cleaner and completely blocking fuel flow. This story is just a reminder to remove and replace ALL 'O' ring's particularly this one which is sometimes difficult to see.



HOW MANY PRIMES 3-5-3?

During the past few years of emission regulated engines we have been changing the number of primes required on various models. With our developments in carburetor and engine design we are going to 3 Primes on all LEV, VLV and OVRM engines at temperatures above 55°F (13°C). This is accomplished through the combination of a new exhaust MCR (mechanical compression release) and an increase in the primer bulb volume. The 3 prime start returns us to a pre-emissions starting procedure.



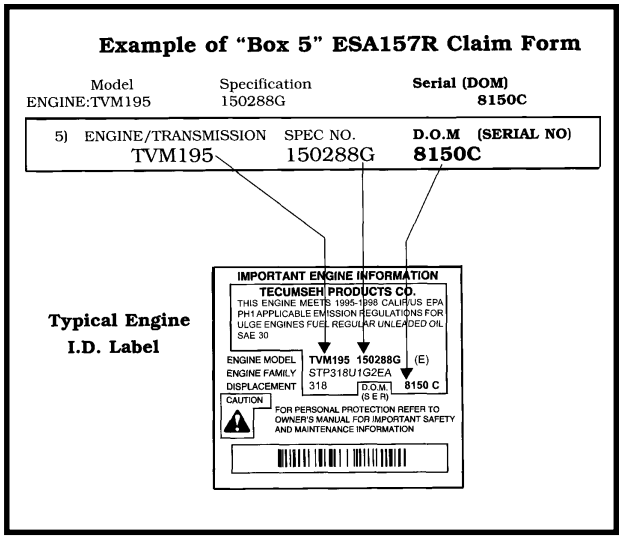
HARMLESS CONCERN

We occasionally receive reports from technicians claiming carburetors on brand new engines having debris found inside the float bowl. This substance may not be harmful at all. During manufacturing we use a powdered graphite on the inlet needle seat to aid in installation. Once fuel is introduced into the system it will wash the graphite away and deposit it in the bottom of the fuel bowl. This material will eventually “run through” with no adverse effects to the engine.

INCOMPLETE DATA FORCING A NEW WARRANTY POLICY

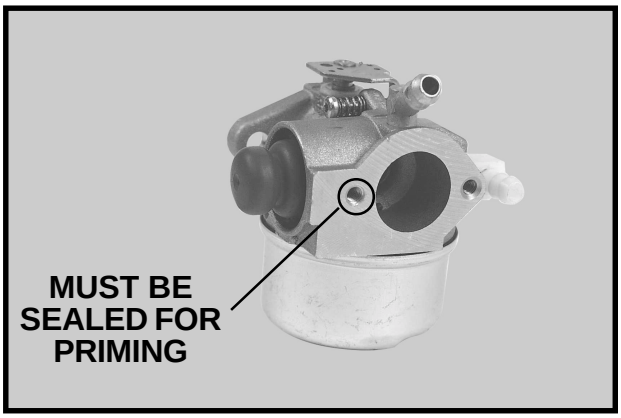
For several years now we have attempted to stress through these meetings the need for complete information warranty claim forms. The result of this effort has been only a small reduction to the number of returned claims. We regret that we must now take stronger action. Effective January of 2000 we will begin to return a high percentage of incomplete claims through our distributors to you. Once they have been reviewed with you and signed by that distributor, they will be processed.

Your dealership can avoid this delay in payment by completely filling in the required information before submitting the claim to Tecumseh Products Company. For guidance regarding this procedure, please follow Service Informational Bulletins 123 and 124.



NO PRIME CHARGE AFTER REBUILD

We receive calls from technicians commenting that after a carburetor rebuild they push the primer and see no fuel coming out of the main nozzle. They believe the carburetor is defective. The correction for this is often a simple screw installation. During the manufacturing process the screw hole that retains the air filter base is drilled through into the primer pocket. When the air filter is installed the screw seals this hole. Before checking the primer function ALWAYS remember to plug this hole with the screw.



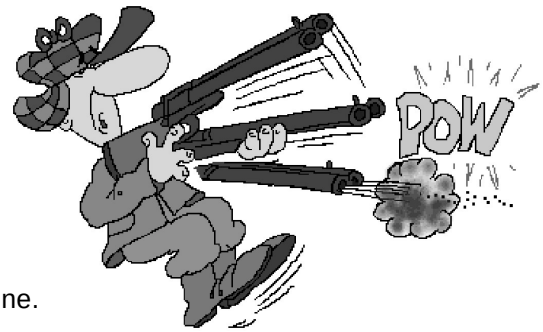
UPDATE VIDEO SET AVAILABLE

This year we again are offerring the Update Seminar Program on video. This format will alllow you to present or review the information with your entire team, at time(s) which is convenient for all. The video is available under Part No. **696334** from your normal source of supply.

One for all the Hunters out there

Possibly the most frequent question we receive from technicians deals with engines hunting and surging. The immediate diagnose is to static test the governor system. But where do we go from there? We have put together a short instruction sheet for your use.

Hunting and Surging at True Idle



Engine hunting and surging at true idle is caused by a fuel delivery problem or an air leak. True idle is the carburetor setting when the throttle plate linkage is against the idle speed adjusting screw after idle mixture adjustment. Because the throttle plate is held stationary during true idle, hunting and surging must be caused by an improper air-fuel mixture related to an air leak or an obstruction in the idle circuit. At true idle, the governor spring applies no force on the throttle plate and has no effect on the idle characteristics of the engine.

Hunting and Surging at Governed Idle

An engine hunting and surging only at governed idle and equipped with an idle mixture adjustment has a governor system or carburetor problem. The idle mixture must be adjusted correctly. Hold the throttle plate linkage against the idle speed adjusting screw and increase the idle speed to the specified governed idle speed. If the engine operates without hunting or surging, the problem is the governed idle spring or linkage. If the engine continues to hunt and surge, the problem is in the carburetor. After testing, return the engine to the correct idle speed.

Hunting and Surging at Top No Load Speed

Troubleshoot hunting and surging at top no-load speed using the same sequential steps used to isolate a governor system or carburetor problem during true idle and governed idle. Once the idle mixture is adjusted and the engine idles smoothly, increase the engine speed using the idle speed adjusting screw. Hold the throttle plate linkage against the idle speed adjusting screw until the engine reaches the specified top no-load speed. Without any appreciable load, fuel is provided by the idle circuit.

If the engine continues to hunt and surge, the carburetor is the probable cause. In this test condition, the governor system has no effect on engine speed. The idle speed adjusting screw control the throttle plate position, which affects engine speed. If the engine operates properly when controlled by the idle speed adjusting screw but hunts and surges when controlled by the governor spring, the governor system is suspect. Check the governor linkage for resistance and binding, and replace the governed idle spring and the main governor spring.

Hunting and Surging Under Load

Hunting and surging under load usually indicates a carburetor or fuel delivery system problem rather than a governor system problem. Fuel fed under load is primarily fed through the main jet and emulsion tube. Most loads are constant enough to maintain the rpm of the engine. The governor system has very little additional effect on the performance of an engine under load except for applications with sizable varying loads such as a generator.

Poor Performance Under Load

Poor performance under load requires first eliminating compression component problems. If the problem is isolated to the fuel system, the cause is usually debris in the main jet or air bleeds. To isolate the problem component, examine the exhaust gas when the engine is under load. If black smoke is present, there is an excess of fuel. This condition may be caused by an incorrect float level setting, a partially clogged main air bleed, or debris lodged between the needle and the seat. If black smoke is not present, and there is no black residue on the muffler deflector, the main air bleed or main jet is probable obstructed.

A primer bulb system or choke can also be used to quickly troubleshoot carburetor problems related to a lean or rich condition. After making carburetor adjustments, slowly close the choke plate when the engine is operating poorly. If performance improves, the air-fuel mixture is too lean. If performance worsens, the air-fuel mixture is too rich. A primer bulb system can also be used to test for a lean or rich condition. Depressing the primer bulb injects extra gas into the carburetor. If the engine air-fuel mixture is too lean, the injection of the extra fuel should improve engine performance. If the engine air-fuel mixture is too rich, the injection of the extra fuel should worsen engine performance.

ENDURO VT SECTION

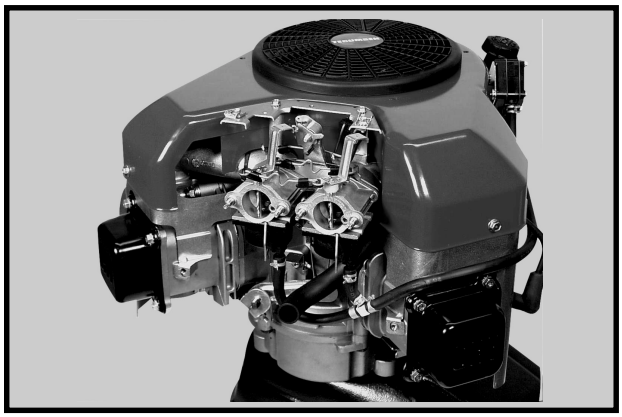
This year we are introducing our first V-Twin engine. In addition to the many standard features you have come to expect from Tecumseh, such as, Cast Iron Cylinder Liners, Full Pressure Gerotor oil pump, CDI electronic ignition, Mechanical Compression Release, Kleen-Aire filtration, the Enduro VT incorporates some exciting changes.

A complete new service manual covering the VT, will be shipped in December of 1999. It is Part Number 696325.

DUAL CARBURETORS

This feature provides superior responsiveness to changes in load and rapid adjustment to changes in speed settings.

To maintain this type of performance, both carburetors MUST be synchronized. Carburetor synchronization must be performed anytime the carburetor body has been disturbed or removed from the intake manifold. Since the Enduro VT utilizes dual series 7 carburetors most carburetor servicing can be accomplished by the simple removal of the carburetor float bowl. This eliminates the need to disturb the carburetor body from the intake manifold.

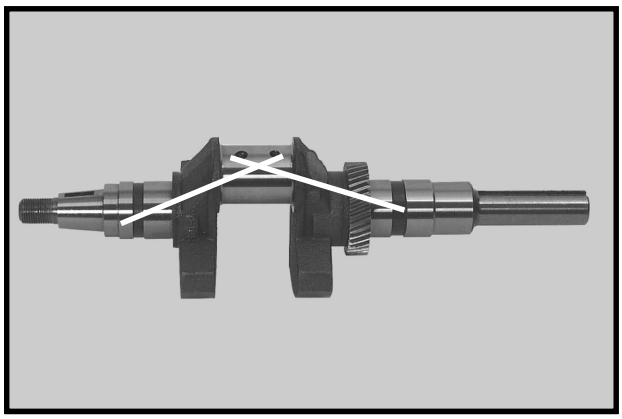


LOWER MAIN BEARING – PRESSURIZED LUBRICATION

The Gerotor oil pump supplies pressurized lubrication to all critical bearing surfaces now including the lower main bearing surface located in the engine mounting flange. A pressure relief port is also built into the flange.

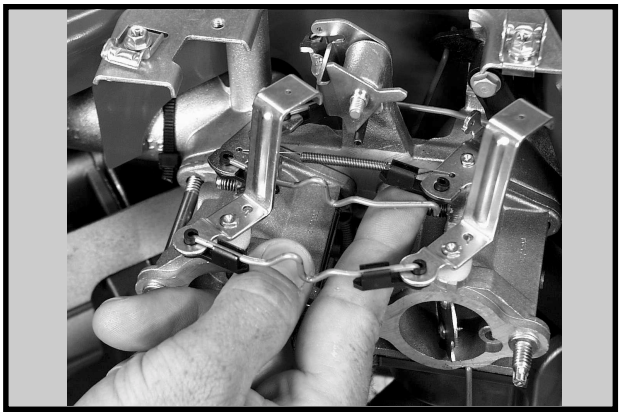
The lubrication path on the TVT differs slightly from the single-cylinder Enduro. Instead of the oil being picked up by the oil pump and being sent directly up through the camshaft to feed the upper bearings, the TVT sends the oil first to the oil filter, next to the lower main bearing and the lower camshaft bearing. The Crankshaft has been drilled to provide the oil passage feeding the connecting rods, upper main bearing and camshaft bearing surfaces.

The 80 oz (2366 ml.) high capacity oil system aids in the lubrication process.



QUICK CONNECT LINKAGE

We have attempted to make the need for servicing even easier by using one size connector link bushing clips on all governor and throttle linkage. This should aid in less downtime for the customer and better productivity for the technician.



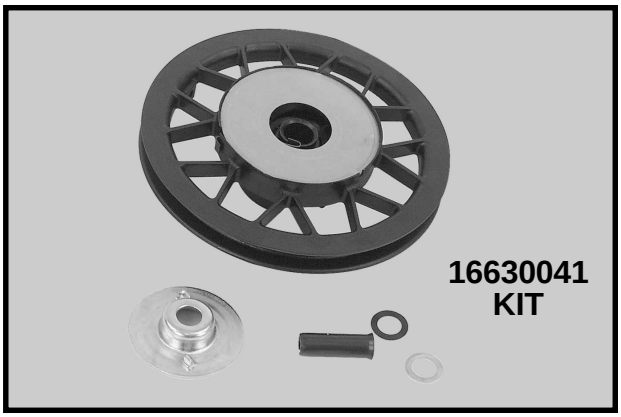
GOVERNED IDLE SYSTEM

For our customers to receive a smooth and constant idle, the Enduro VT has been manufactured with a governed idle system. This system uses the governor to regulate the ever changing load demands at idle. With a governed idle system, all adjustments to the idle RPM are made at the governor spring bracket and NOT the idle RPM adjustment (crack) screw.

EUROPA NEWS

RECOIL STARTERS

We would remind you that individual components for these starters are no longer available. On engines utilizing the integral starter/blower housing, the starters may be serviced by using the pulley repair kit part number **16630041**. This kit includes all internal starter parts (with the exception of the rope) and will upgrade the starter unit to the latest design as used in current production. When replacing the rope, ensure that the length of the new rope is 90" (2,300 mm). This is to avoid the possibility of the rope reaching the end during normal use, which could result in damage to the pulley.

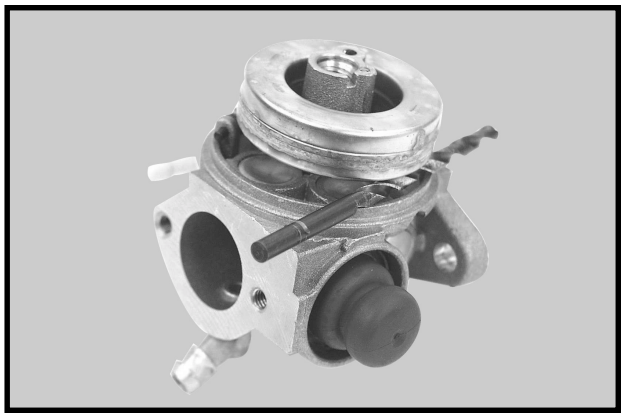


HOT STARTING DIFFICULTIES

From time to time we hear reports of difficult hot starting. First confirm that the customer is not unnecessarily priming or choking the carburetor when the engine is hot. If this is not the case we would suggest that all engines equipped with a brass float, the float level is checked as follows:

- Invert the carburetor with the float bowl and 'O' ring removed.
- Place the shank of a 5.0 - 5.5 mm (7/32") drill bit on the carburetor body opposite and parallel to the float hinge pin. At this position the float should just touch the drill bit. Adjustment can be made by bending the tab on the float.

NOTE: If a plastic float is fitted these are non adjustable.

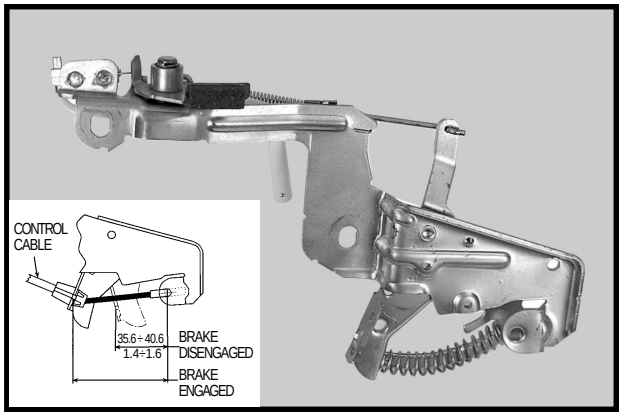


NO COMPRESSION RELEASE

Certain engines are now manufactured without any compression relief device due to either the engine or the application not requiring it. For example, the LEV80 is a small capacity engine, and used with the high ratio soft pull starter, decompression is not required. Since early 1999 the AQ148 engine, which is especially produced for Atco Qualcast, has been manufactured with a camshaft featuring plastic lobes and no compression release (NCR). In this instance the heavy flywheel over rides the use of a decompressor. Alternatively, some chippers using the OHH50 have sufficient inertia in the chipping disk as to negate the use of the compression release device.

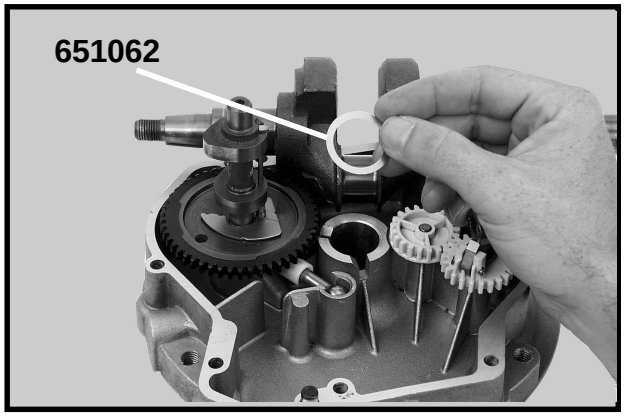
MACHINE BRAKES

During the season our customer services staff received many calls relating to engine starting or engine misfiring, which after investigation proves to be the fault of insufficient travel on the brake cable. Remember that the operation of the brake first removes the brake pad from the flywheel, and then switches on the ignition. If the inner cable is too long, or the cable has been fitted incorrectly, it will result in the ignition circuit not being made correctly preventing a spark, or causing an intermittent spark. With the machine handle held in the operating position and the brake disengaged, check that the measurement is between 1.4 in. - 1.6 in. (35.6 mm - 40.6 mm).



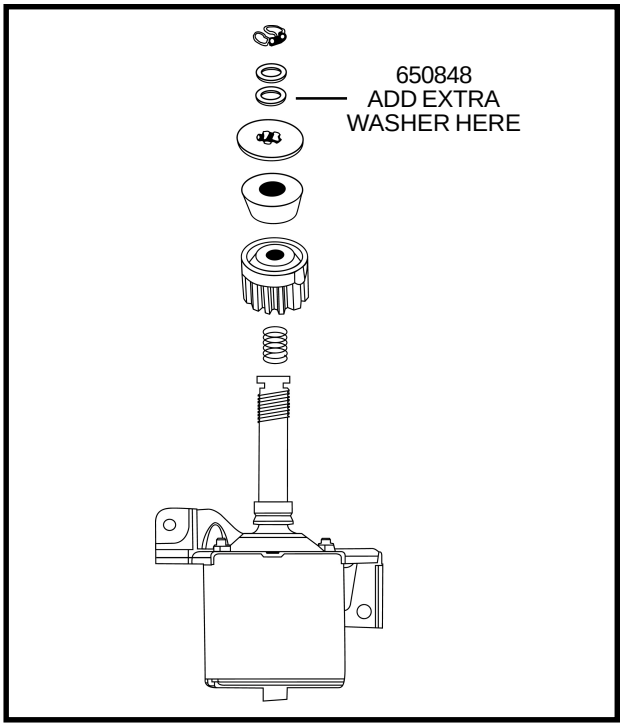
VLV60 (126) AL-KO RIDER (Specification 50216B)

We have received reports of excessive wear to the bottom thrust bearing on the VLV engine fitted to this machine. This is the result of the clutch spring causing a load to the thrust surface. If this problem is found, repair the engine using a new flange assembly and new crankshaft if the timing gear that acts as a thrust bearing is scored. In addition add thrust washer part number **651062** between the timing gear and the flange to prevent reoccurrence of the failure. If warranty applies, file a claim in the usual manner. This engine has been updated to specification 502016E, which included the thrust washer.



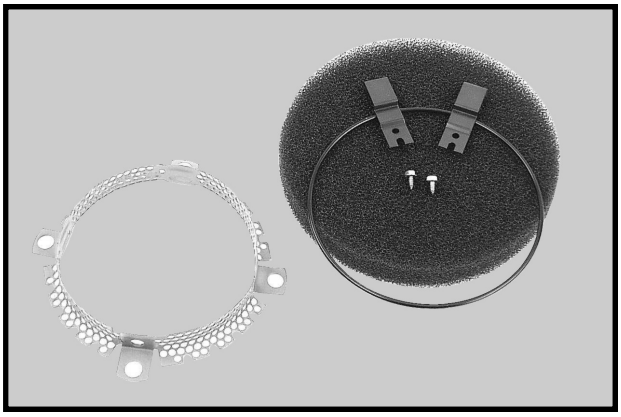
JAMMED BENDIX DRIVE NUTS - ELECTRIC START ENGINES

Occasionally we see Bendix drive nuts jammed as a result of the return spring becoming trapped between the drive nut and the armature shaft. This was the result of a machine tolerance problem on the shaft. An easy fix is to add washer part number **650848** at the top of the shaft between the drive nut and the 'C' clip. This will reduce the travel of the drive nut and prevent the return spring from becoming trapped.



OVERHEATING ENGINES

During the last couple of seasons, we have seen an increased incidence of both two and four stroke engines overheating as a result of the air intake and cooling fins being blocked by grass debris. This is prevalent on hover mowers and nylon filament trimmers, probably because these machines do create a large amount of airborne debris.

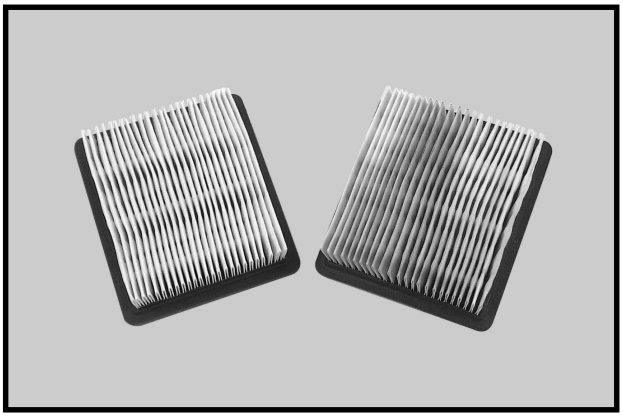


Please point out to customers who are using these machines the importance of keeping air intakes, cooling fins and other areas, free from grass and other debris. We can offer some optional grass screens if this helps the customer. Machines using the MV100S can be retrofitted with an intake screen, part number 100.41.003.000. when fitting this screen, which is mounted underneath the starter, it will be necessary to remove the spinning screen which is mounted on the flywheel. On machines using TVXL840 and VLV engines, a starter muff, part number 730604 is available for retrofitting. When fitting these optional screens it is necessary again to point out to your customer that they must be kept clear of grass.

Flymo hover machines L400 and L470 - both use foam elements to pre-clean air for the cooling system. Again these must be in place and in good condition, and kept clear from debris if the engine is to cool properly.

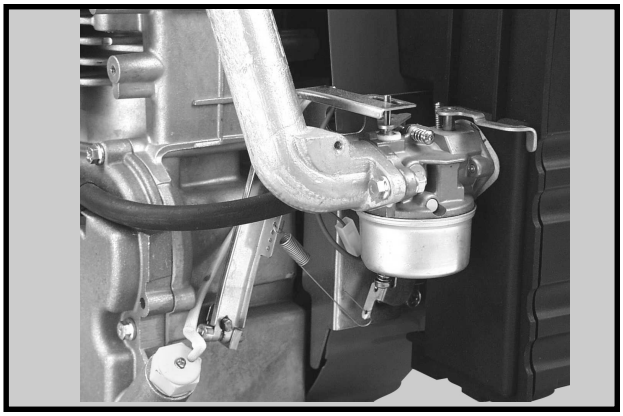
ENGINES EQUIPPED WITH PAPER ELEMENT FILTERS

Many engines are now produced utilizing automotive style paper element filters. Of course these filter elements should automatically be changed during service. It is worth while to note that if the paper element becomes saturated, either with oil or fuel, the porosity of the paper can change, therefore changing the carburetion.



If the customer reports poor starting or running of the engine, it is always worth the while renewing the filter elements first of all. This will eliminate any possibility of a damaged air filter causing the problem. If, for instance, the air cleaner element has become soaked in fuel, due perhaps to the customer turning the machine on its side, this would not necessarily be obvious when inspecting the filter.

GEO-TEC GOVERNOR OPERATION/ ADJUSTMENT



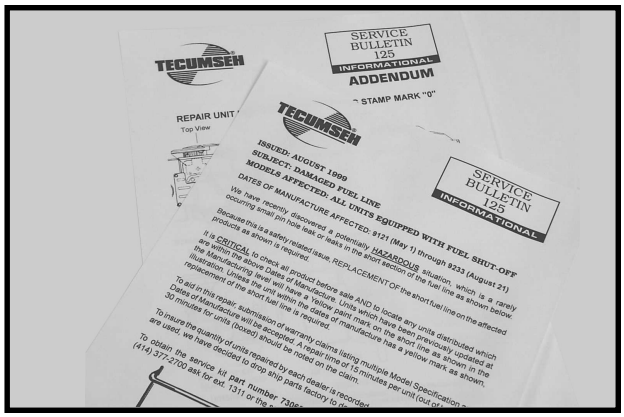
During 1999 the Geo-Tec range of horizontal shaft engines have been introduced into the market place. These engines all feature a new 'D' governor system whereby the governor lever is directly connected to the carburetor throttle without the use of a loose link. By deleting the loose link, lost movement in the system is reduced, so reducing the governor droop and providing improved performance. The setting and adjustment procedures for this system are exactly the same as existing systems used on horizontal shaft engines.

SERVICE BULLETINS

125

Fuel Line Recall

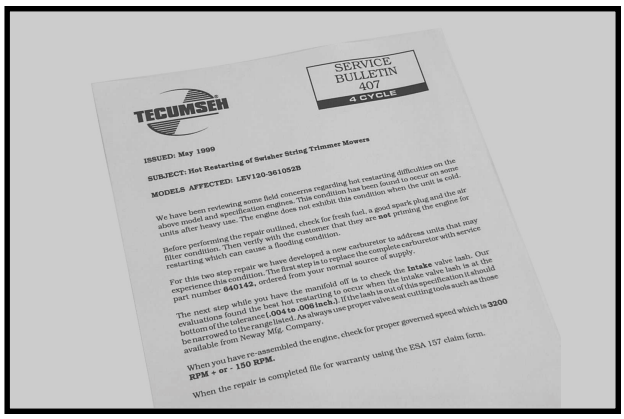
In cooperation with the US Consumer Product Safety Commission (CPSC), Tecumseh Products Company is voluntarily recalling about 118,000 engines with a fuel shut-off valve on various brands of outdoor power equipment. This bulletin covers in detail the units effected and repair procedures.



407

Hot Restart on LEV 120 – 361052B

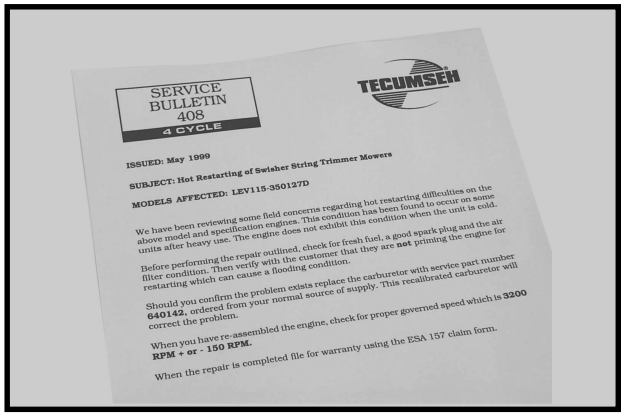
Service bulletin 407 was released after receiving field concerns regarding hot restarting difficulties on the above model and specification engines. The bulletin instructed the technician to check and set the intake valve lash between .004 and .006 and also to install a new carburetor part # 640142.



408

Hot Restarting of Swisher String Trimmer Mowers

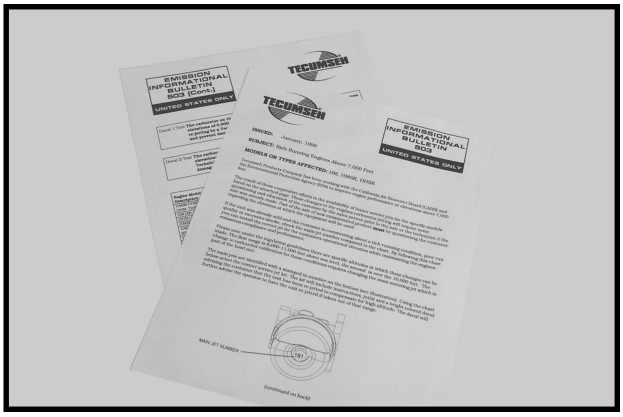
This bulletin pertains to an LEV115-350127D mounted on a Swisher String Trimmer Mower having hot restart difficulties. A carburetor part # 640142 would correct the problem.



503

Rich Running HM, HMSK, OHSK above 7,000 Feet.

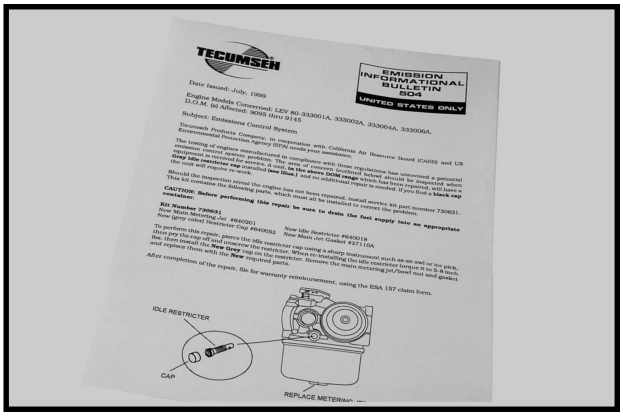
A cooperative effort between the California Air Resource Board, Environmental Protection Agency and Tecumseh Products Company has resulted in the availability of leaner service jets for specific model engines being run above 7000 feet. A matrix chart listing the models and available service kits is given.



504

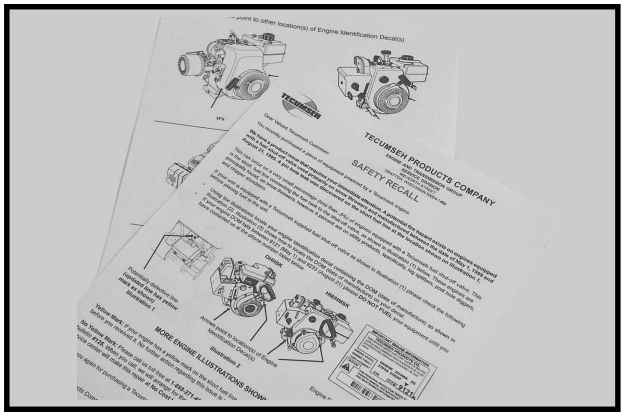
Emission Control Systems

Testing of LEV80 engines manufactured between the D.O.M. of 9095 and 9145 revealed a possible emission control system problem. If the engine possesses a black restrictor cap and fell into the D.O.M. range, a repair kit part # 730631 is to be installed.



Safety Recall Letter

This recall letter was sent to all customers of record from data supplied by manufacturers and retailers. Please assist and repair all equipment affected by this recall.



Service Tool List and Order Form

Special Service, Diagnostic, Measurement & Repair Tools Description	Part Number	User Cost	Premier Dealer	Standard Dealer	Limited Dealer	On Hand	On Order
*Tool Kit	670195E		M	M	M		
Tachometer (Inductive or Vibratach)	670156 Vibratach or 670365 Inductive		M or R	M or R	M or R		
Ignition Tester	670366		M	M	M		
Multi Meter VOM & Temperature	670349		M	M	M		
Compression Tester	670358		M	M	M		
Outside Micrometers 0-1"	670350		M	R	R		
1-2:	670351		M	R	R		
2-3"	670352		M	R	R		
3-4:	670353		M	R	R		
Telescoping Gauge Set	670357		M	R	R		
Dial Indicator	670241		M	R	R		
Inspection Plate (Plate Glass) - Obtain Locally			R	R	R		
Feeler Gauge Set	670361		M	M	M		
Inch Pound Torque Wrench 0-600 inch lbs.	670363		M	M	M		
Valve Spring Compressor "C" Type	670362		M	M	M		
Piston Ring Compressor	670359		M	M	M		
Piston Ring Expander	670117		M	M	M		
**Valve Seat (Neway LG3000 Kit or comparable)	670347		M	M	M		
**Face Cutting Set (Neway 612 Gizmatic)	670348		R	R	R		
Cylinder Hone (Flex)	670360		M	M	M		
Starter Bendix Ring Tool	670346		M	R	R		
Crankcase Vacuum / Oil pressure adapter	670364		M	R	R		
Hole Gauge Set	670356		M	M	M		
Oil Vacuum System (220 Volt)	670355						
Extreme Duty Oil Tank	670367		R	R	R		
Leak Test Kit - Complete	670340		R	R	R		
Leak Test Transaxle / Carburetor Adapter Kit	670345		R	R	R		
Dial Caliper, 6"	670368		R	R	R		
Total Cost of Mandatory Tools							

* See Tecumseh Form #694862 for Complete Tool Kit List
** Neway LG2000 or 102 kits can be upgraded by calling Neway direct: 1-800-248-3889
M = Mandatory Tools (Must have or place order)
R = Recommended Tools
NOTE: Prices subject to change
Equivalent tools may be used.

Dealer Name _____
Address _____
City, State, Zip _____
Phone _____
Account No. _____

SEND US YOUR TIPS

Many of the bits of information that we pass along in our schools come from our dealer network. We want to give you the opportunity to contribute to next year's Technician's Seminar Booklet. Please write down your tip(s) and fax or send it to:

Tecumseh Products Company
900 North Street
Grafton, WI 53024-1499

Attn: Education Department

FAX NO. 262-377-4485

Name: _____
Company: _____
Address: _____
City, State, Zip Code _____

The Top 5 responses will receive a prize from Tecumseh.

Thank you in advance for your input.

TECUMSEH KEEPING YOUR SHOP PROFITABLE

If you don't know what your repair shops efficiency or productivity is, you may be losing money.

In most outdoor power equipment service centers the repair shop is where the real money is made. Even though this is true, some questions need to be answered.

- ***Could we be making more money ?***
- ***If the repair shop is not making money, why not ?***
- ***Are the technicians always being productive ?***
- ***Is my service shop as efficient as it should be ?***

When you come to work tomorrow and you see that your service shop is jammed. Customers are lined up at the counter, and you realize you must try to satisfy them. Your parts shelves seem to be empty of the fast moving items, and the phone just never stops ringing.

Along with the customers, you also have your mechanics looking all over for tools and waiting to use the fiche reader or waiting for you look up parts for them. Some equipment is not tagged properly and it also looks like technicians are just standing around wasting time.

At this busy time of year, you may realize and see some of the efficiency and productivity problems but are just too busy to deal with them. To succeed in this industry these problems must be dealt with. Many dealers just ignore these problems and just raise the labor rate and adjust up the repair charges. Manufacturers and the public will not always go along with this in the future.

If some of this sounds like your shop, you may be losing money. If this is true it is very important to start measuring and controlling you shop's efficiency and productivity immediately. Remember this is the time of year when the profits need to be made and some **PUT AWAY** to cover the **LEAN TIMES** in the off season. This liquidity can also put you in a position to get cash discounts on parts purchases improving your profit margin.

In this section we will deal only with the repair shop side of your business.

Shop efficiency refers to the technicians ability to perform quality work in relation to a set time rate schedule. This means: Do your technicians perform repairs in the amount of time allowed or does it take longer? There are three types of time that should be considered when measuring your shop productivity and efficiency.

1. ***Average time*** This is the time allowed for a specific labor task, and is used to determine the charges. If this is a warranty repair this must be within the guidelines of Tecumseh Products Company.
2. ***Actual time*** The time really spent to perform the work on a repair order.
3. ***Available time*** This is the actual time a technician is physically present during working hours, excluding official break periods.

Measuring shop efficiency compares your flat rate time to the true time it takes the mechanic to do the specific job. This efficiency can vary and depends on a mechanic's skill, experience, motivation, and training. The importance of attending factory tear down schools and update meetings can be a large part of this proper training.

An example of how you figure out your percentage of efficiency for a job, is to divide the flat-rate time by the actual time, then multiply that by 100.

EXAMPLE:

$$\frac{\textbf{Scheduled time}}{\textbf{Actual time}} \quad \textbf{X} \quad \textbf{100} \quad = \quad \textbf{Percent of Efficiency}$$

4.0 billable hours / **4.9 actual hours worked** **X 100 = 82% Efficiency**

In most cases your efficiency rate should fall between 110 to 125% range. You will have to determine what this level should really be for your business. As you can see by the example the percent is considerably below the proper level. Taking one example is also accurate or true, but if your level is averaging below 100 you need to re-examine your business. Becoming more efficient means more money. As we all know some jobs just go bad for uncontrollable reasons. But if a trend of low efficiency is found, the manager or owner plus the technician must work together to focus on the problem areas.

Low efficiency can come from any of the following areas:

- *Work given to a technician not qualified for the specific job*
- *Service shop not equipped with proper service tools and equipment*
- *Inefficient time allowed by manufactures rate guide or dealers*
- *Personal or health problems of technician*
- *The need for more technical training on product lines*
- *Dealer not stocking enough popular service parts*
- *Delays at the parts counter in looking up parts*
- *Poor system of locating & storing of equipment for repairs*

Now lets look at how Productivity is measured. Productivity compares the actual time a technician works to the available time he should be able to work. This tells you if the technician is using his time productively or wasting time. Productivity can be expressed in a percentage for ease of looking at in this way:

Actual time / **Available time** **X 100 = % of productive time**

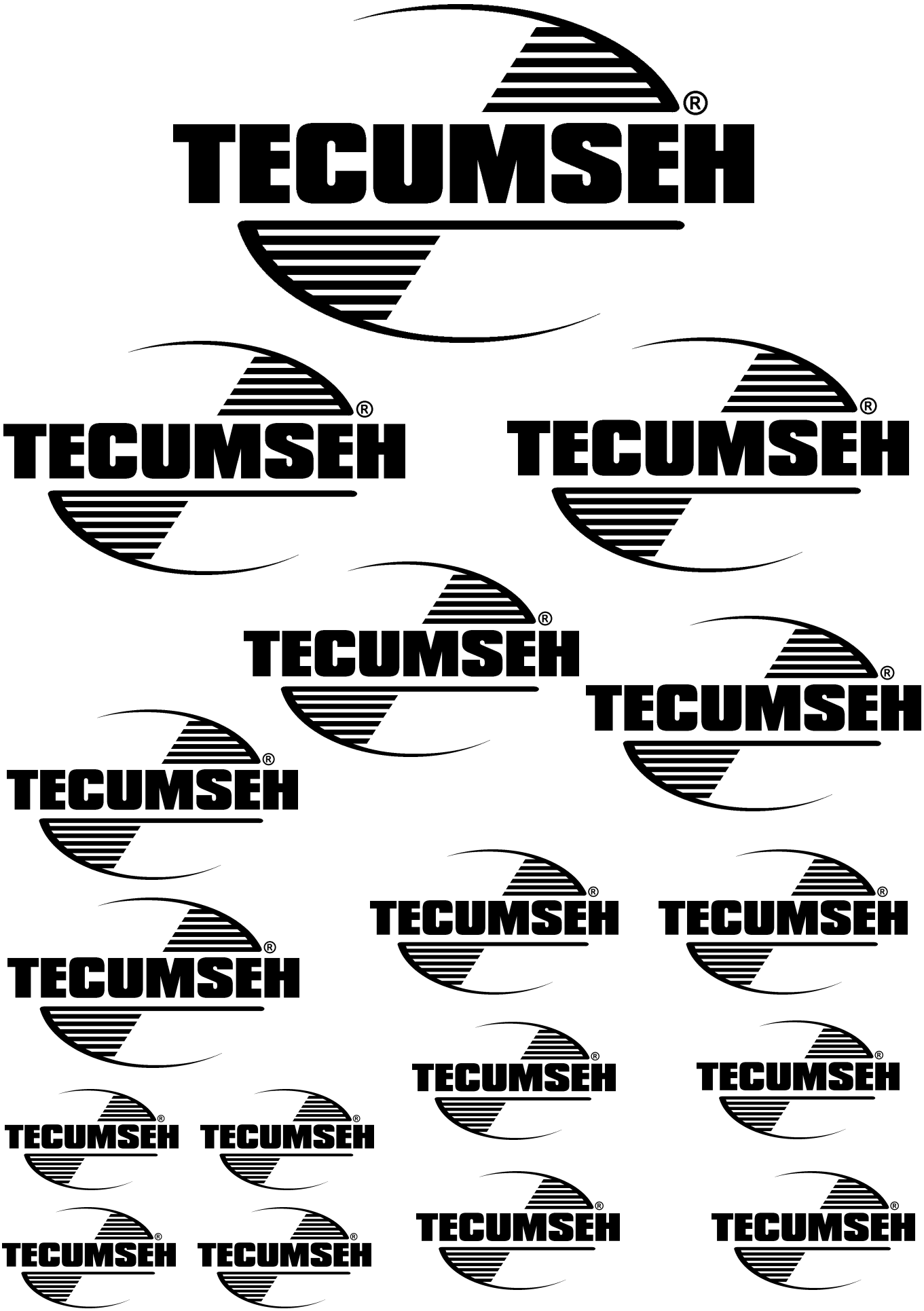
7.2 Actual hours / **8.0 Available hours** **X 100 = 90% productive**

Most experts say that your productivity should be 90% or above. Obtaining or demanding 100% productivity is not realistic or fair when dealing with human beings. But low productivity could come from:

- *Poorly matching work with skills*
- *Lack of work*
- *Talking and wasting time*
- *Lack of motivation*
- *Poorly trained technicians*
- *Unorganized & messy repair shop*
- *Having technician doing non technician jobs*

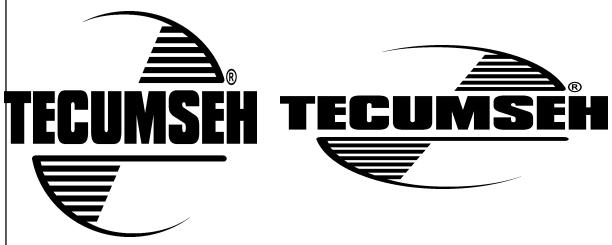
In order to put efficiency and productivity together and give you effective and truthful information, you should record actual time for every technician on every labor job and verify this information. Many efficient shops use time cards or a time clock to log in and out on a job to get a better handle on actual times.

To really get a handle on your shop you would need to record and keep daily records of efficiency, productivity, available time, actual time and flat-rate times for every repair order in your shop. At the end of every day you should do the calculations for available time, actual time and flat rate for each of your technicians. These items should be recorded on a ledger or chart so you really see your efficiency and productivity percentage calculations in your repair shop and then start to improve the weak areas. Some of the changes you make may not show up right away, but over the long run you will see profitable improvements.


TECUMSEH®

Incorrect Ways of Using Emblem

DO NOT stretch emblem out of proportion



WRONG

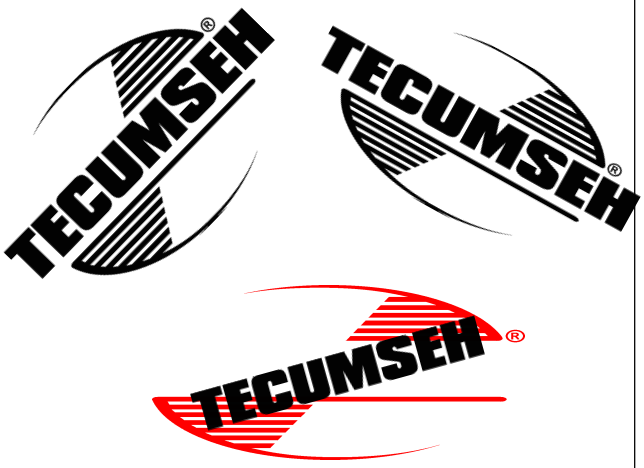
DO NOT place words inside the emblem

WRONG

DO NOT change color of emblem in any way other than approved color schemes

WRONG

DO NOT angle the emblem in any way



WRONG

DO NOT change emblem in any way

WRONG

TECUMSEH®

SERVICE BULLETIN 125

INFORMATIONAL

ISSUED: AUGUST 1999

SUBJECT: DAMAGED FUEL LINE

MODELS AFFECTED: ALL UNITS EQUIPPED WITH FUEL SHUT-OFF

DATES OF MANUFACTURE AFFECTED: 9121 (May 1) through 9233 (August 21)

We have recently discovered a potentially **HAZARDOUS** situation, which is a rarely occurring small pin hole leak or leaks in the short section of the fuel line as shown below.

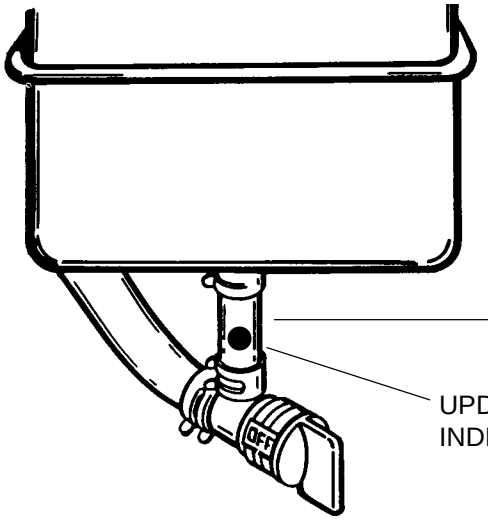
Because this is a safety related issue, REPLACEMENT OF the short fuel line on the affected products as shown is required.

It is **CRITICAL** to check all product before sale AND to locate any units distributed which are within the above Dates of Manufacture. Units which have been previously updated at the Manufacturing level will have a Yellow paint mark on the short line as shown in the illustration. Unless the unit within the dates of manufacture has a yellow mark as shown, replacement of the short fuel line is required.

To aid in this repair, submission of warranty claims listing multiple Model Specification and Dates of Manufacture will be accepted. A repair time of 15 minutes per unit (out of box) and 30 minutes for units (boxed) should be noted on the claim.

To insure the quantity of units repaired by each dealer is recorded and only the correct parts are used, we have decided to drop ship parts factory to dealer direct.

To obtain the service kit **part number 730632** within the United States please call (262) 377-2700 ask for ext. 1311 or the service bulletin desk ref. #125.



TECUMSEH®

SERVICE BULLETIN 125

INFORMATIONAL

ADDENDUM

REVISION DATE: August 31, 1999

SUBJECT: ADDENDUM - Service Bulletin 125 has been amended.
MODELS: Only those listed below.

The following list of model and specification engines, **ARE THE ONLY ONES AFFECTED BY** the potentially defective fuel line:

H35-45492Y	HMSK105-159904A	HMSK90-156533D	OHH60-71112C	OHSK55-69516C
H35-45717Y	HMSK105-159906A	HSK40-55510V	OHSK100-221606A	OHSK55-69519C
H35-45746Y	HMSK105-159907A	HSK60-76005C	OHSK100-221607A	OHSK55-69520C
HM100-159298P	HMSK110-159953A	HSK60-76011C	OHSK110-221701A	OHSK70-72500B
HM100-159350P	HMSK110-159957A	HSK60-76012C	OHSK110-221703A	OHSK70-72501B
HM100-159351P	HMSK110-159958A	HSK60-76013C	OHSK110-221708A	OHSK70-72505B
HM100-159383P	HMSK110-159962A	HSK60-76016C	OHSK110-221709A	OHSK70-72506B
HM100-159400P	HMSK80-155527V	HSK70-130208U	OHSK110-221710A	OHSK70-72507B
HM80-155522S	HMSK80-155545V	HSK70-130283U	OHSK110-221712A	OHSK70-72508B
HM80-155593S	HMSK80-155635V	HSK70-130302U	OHSK110-221713A	OHSK70-72511B
HM80-155653S	HMSK80-155640V	HSSK50-67002S	OHSK120-223601A	OHSK70-72512B
HM80-155664S	HMSK80-155645V	HSSK50-67261S	OHSK130-223801B	OHSK70-72513B
HMSK100-159001W	HMSK80-155667V	HSSK50-67366S	OHSK130-223802B	OHSK80-221202A
HMSK100-159295W	HMSK80-155668V	HSSK50-67368S	OHSK130-223803B	OHSK90-221401A
HMSK100-159303W	HMSK80-155669V	HSSK50-67390S	OHSK130-223804B	OHSK90-221404A
HMSK100-159426W	HMSK80-155670V	HSSK50-67395S	OHSK130-223808B	OHSK90-221406A
HMSK100-159432W	HMSK80-155671V	HSSK50-67401S	OHSK130-223814B	OHSK90-221407A
HMSK100-159433W	HMSK80-155672V	LEV115-350126D	OHSK130-223815B	OHSK90-221408A
HMSK100-159434W	HMSK80-155684V	OHH55-69040E	OHSK130-223816B	OHSK90-221410A
HMSK100-159439W	HMSK85-155902A	OHH55-69058E	OHSK130-223818B	OHSK90-221411A
HMSK100-159440W	HMSK90-156519D	OHH55-69073E	OHSK130-223819B	OHSK90-221412A
HMSK100-159441W	HMSK90-156528D	OHH55-69085E	OHSK50-68500C	OHSK90-221413A
HMSK105-159903A	HMSK90-156532D	OHH55-69103E	OHSK55-69513C	OHV130-206854C
				VLV126-502052E

Note these units:

- are equipped with the Tecumseh supplied, in line shutoff valve.
- were produced between May 1, 1999 and August 21, 1999.
- are principally found on snow throwers, however 5% are on chore product specifically, log splitters, post hole diggers and chipper shredders.

Marking updated product: (Change effective immediately)
Please mark all updated product with a **"0" ZERO** in the location referenced on the following page of this addendum. If necessary, purchase the appropriate punch and place the description and cost on your first warranty claim.

Tracking Repaired Units: Effective immediately it is **CRITICAL** you record the equipment manufactures unit serial number(s) as part of the procedure. If the space provided on the ESA-157 warranty claim form is insufficient you can attach a separate sheet listing these numbers.

TECUMSEH®

SERVICE BULLETIN 407

4 CYCLE

ISSUED: May 1999

SUBJECT: Hot Restarting of Swisher String Trimmer Mowers

MODELS AFFECTED: LEV120-361052B

We have been reviewing some field concerns regarding hot restarting difficulties on the above model and specification engines. This condition has been found to occur on some units after heavy use. The engine does not exhibit this condition when the unit is cold.

Before performing the repair outlined, check for fresh fuel, a good spark plug and the air filter condition. Then verify with the customer that they are **not** priming the engine for restarting which can cause a flooding condition.

For this two step repair we have developed a new carburetor to address units that may experience this condition. The first step is to replace the complete carburetor with service part number **640142,** ordered from your normal source of supply.

The next step while you have the manifold off is to check the **Intake** valve lash. Our evaluations found the best hot restarting to occur when the intake valve lash is at the bottom of the tolerance **(.004 to .006 inch.)**. If the lash is out of this specification it should be narrowed to the range listed. As always use proper valve seat cutting tools such as those available from Neway Mfg. Company.

When you have re-assembled the engine, check for proper governed speed which is **3200 RPM + or - 150 RPM.**

When the repair is completed file for warranty using the ESA 157 claim form.

SERVICE BULLETIN 408

4 CYCLE

ISSUED: May 1999

SUBJECT: Hot Restarting of Swisher String Trimmer Mowers

MODELS AFFECTED: LEV115-350127D

We have been reviewing some field concerns regarding hot restarting difficulties on the above model and specification engines. This condition has been found to occur on some units after heavy use. The engine does not exhibit this condition when the unit is cold.

Before performing the repair outlined, check for fresh fuel, a good spark plug and the air filter condition. Then verify with the customer that they are **not** priming the engine for restarting which can cause a flooding condition.

Should you confirm the problem exists replace the carburetor with service part number **640142,** ordered from your normal source of supply. This recalibrated carburetor will correct the problem.

When you have re-assembled the engine, check for proper governed speed which is **3200 RPM + or - 150 RPM.**

When the repair is completed file for warranty using the ESA 157 claim form.

TECUMSEH®

EMISSION INFORMATIONAL BULLETIN 503

UNITED STATES ONLY

ISSUED: January, 1999

SUBJECT: Rich Running Engines Above 7,000 Feet

MODELS OR TYPES AFFECTED: HM, HMSK, OHSK

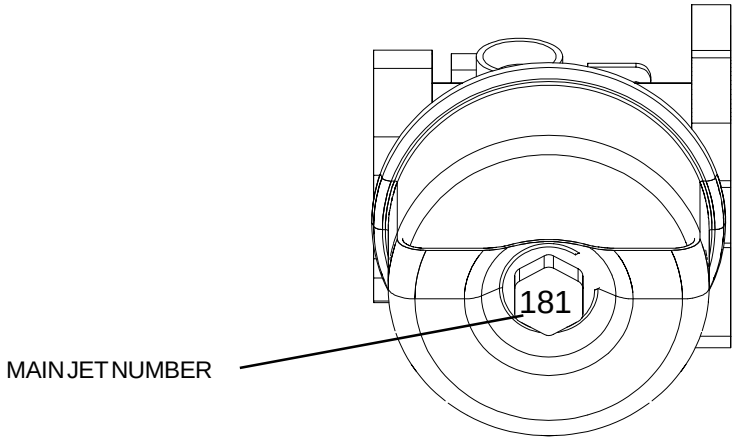
Tecumseh Products Company has been working with the California Air Resource Board (CARB) and the Environmental Protection Agency (EPA) to improve engine performance at elevations above 7,000 feet.

The result of these cooperative efforts is the availability of leaner service jets for the specific models listed on the attached page. These changes to the engines carburetor jetting will require some questioning and education of the customer by the sales person prior to the sale or the technician if the sale was already made. Part of the sale of new emissionized product **must** be questioning the customer regarding the elevation at which the equipment will be used.

If the unit was already sold and the customer is commenting about a rich running condition, poor run quality or excessive smoke, check the main jet number compared to the chart. By following this chart you can install the correct jet for the customers operational elevation while maintaining the engines emissions compliance and performance.

Please note under the regulation guidelines there are specific altitudes at which these changes can be made. The first range is 6,000-11,000 feet above sea level, the second is over the 10,000 feet. The change to carburetor calibration for these conditions requires changing the main metering jet which is part of the bowl nut.

The main jets are identified with a stamped in number on the bottom (see illustration). Using the chart below select the correct service jet kit. The kit will include instructions, jet(s) and a bright colored decal advising the customer that the unit has been re-jetted to compensate for high altitude. The decal will further advise the operator to have the unit re-jetted if taken out of that range.



(continued on back)

EMISSION INFORMATIONAL BULLETIN 503 (Cont.)

UNITED STATES ONLY

TECUMSEH®

Decal 1 Text **The carburetor on this engine has been re-jetted to improve performance between elevations of 6,000-11,000 feet. Operation above or below this range requires re-jetting by a Technician / Dealer to maintain the engines emission certification and prevent damage to the engine.**

Decal 2 Text **The carburetor on this engine has been re-jetted to improve performance at elevations above 10,000 feet. Operation below this range requires re-jetting by a Technician / Dealer to maintain the engines emission certification and prevent damage to engine.**

Engine Model / Description	Original Bowl Nut Number	Service Kit Part Number for use at elevation's of 6,000-11,000 Ft.	Service Kit Part Number for use above 10,000 Ft.
HM80/HM90 After DOM 7245	183	640189 (207)	640194 (206)
HM100 After DOM 7199	183	640189 (207	640194 (206)
OHM120	183	640189 (207)	640194 (206)
HMSK80/85/90	167	640186 (205)	640202 (203)
HM80/90/100 (RV Package)	163	640185 (149)	640193 (204)
HMSK100/105/110	163	640185 (149)	640193 (204)
OHSK 80/90/100/110	188	640187 (163)	640192 (167)
OHSK120/130	181	640188 (167)	640191 (148)
HM80/90 Prior to DOM 7245	162	640190 (148)	640203 (149)
HM100 Prior to DOM 7199	162	640190 (148)	640203 (149)

TECUMSEH®

EMISSION INFORMATIONAL BULLETIN 504

UNITED STATES ONLY

Date Issued: July, 1999

Engine Models Concerned: LEV 80-333001A, 333002A, 333004A, 333006A.
D.O.M. (s) Affected: 9095 thru 9145

Subject: Emissions Control System

Tecumseh Products Company, in cooperation with California Air Resource Board (CARB) and US Environmental Protection Agency (EPA) needs your assistance.

The testing of engines manufactured in compliance with these regulations has uncovered a potential emission control system problem. The area of concern (outlined below) should be inspected when equipment is received for service. A unit, **in the above DOM range** which has been repaired, will have a **Gray idle restricter cap** installed **(see Illus.)** and no additional repair is needed. If you find a **black cap** the unit will require re-work.

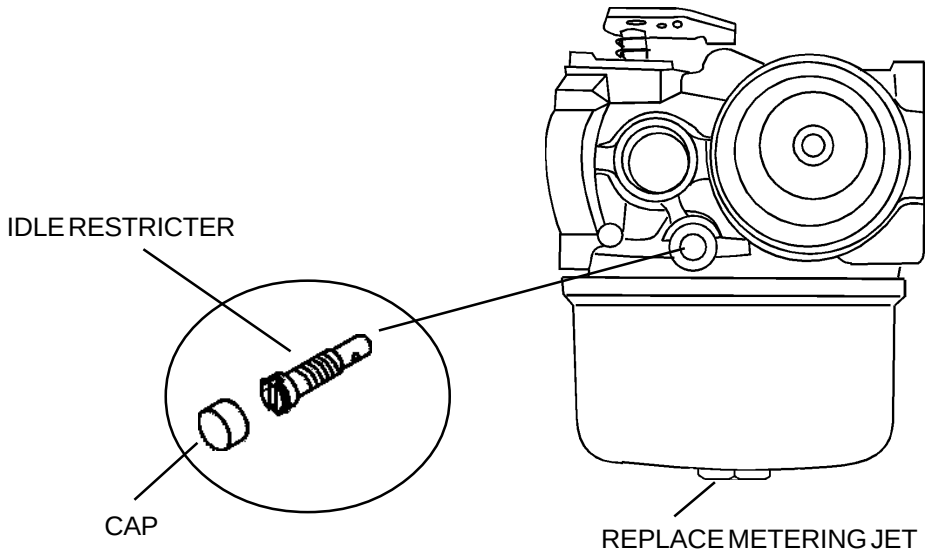
Should the inspection reveal the engine has not been repaired, install service kit part number 730631. This kit contains the following parts, which must all be installed to correct the problem.

CAUTION: Before performing this repair be sure to drain the fuel supply into an appropriate container.

Kit Number 730631
New Main Metering Jet #640201 New Idle Restricter #640018
New (grey color) Restricter Cap #640053 New Main Jet Gasket #27110A

To perform this repair, pierce the idle restricter cap using a sharp instrument such as an awl or ice pick, then pry the cap off and unscrew the restricter. When re-installing the idle restricter torque it to 5-8 inch lbs, then install the **New Grey** cap on the restricter. Remove the main metering jet/bowl nut and gasket and replace them with the **New** required parts.

After completion of the repair, file for warranty reimbursement, using the ESA 157 claim form.



TECUMSEH PRODUCTS COMPANY
ENGINE AND TRANSMISSION GROUP
SERVICE DIVISION
900 NORTH STREET
GRAFTON, WISCONSIN 53024-1499

SAFETY RECALL

Dear Valued Tecumseh Customer:

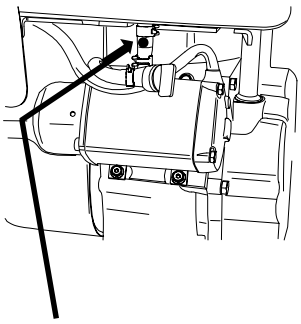
You recently purchased a piece of equipment powered by a Tecumseh engine.

We have a product issue that requires your immediate attention. A potential fire hazard exists on engines equipped with a fuel shut-off valve used primarily on snow throwers and manufactured between the date of May 1, 1999 and August 21, 1999. A pin hole leak was discovered on the short fuel line at the location shown on Illustration 1.

This can occur on a very small percentage (less than .5%) of engines equipped with a Tecumseh fuel shut-off valve. This is the short, fuel line connecting the fuel tank to the shut-off valve, as shown in illustration (1) below. These engines are principally found; on snow throwers; however 5 percent are on utility products, specifically, log splitters, post hole diggers, and chipper shredders.

If your unit is equipped with a Tecumseh supplied fuel shut-off valve as shown in illustration (1) please check the following before placing fuel in the unit.

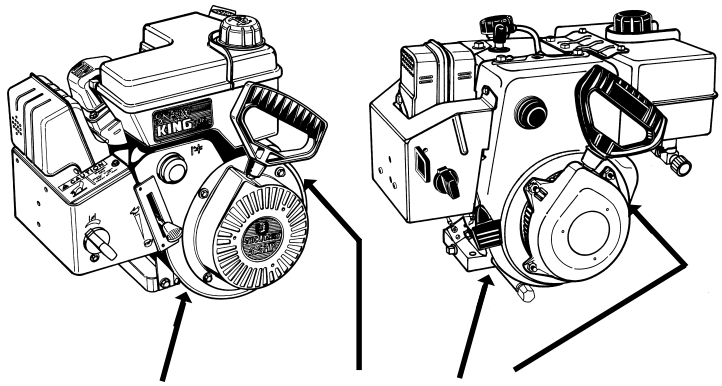
- Using the illustrations locate your engine identification decal containing the DOM (date of manufacture) as shown in illustration (2). Illustration (3) shows how to locate the DOM (date of manufacture) on your decal.
- If your engine DOM falls between 9121 (May 1) and 9233 (August 21) please **DO NOT FUEL** your equipment until you have contacted us at the phone number listed below.



Potentially defective line **(updated line has yellow mark as shown)**

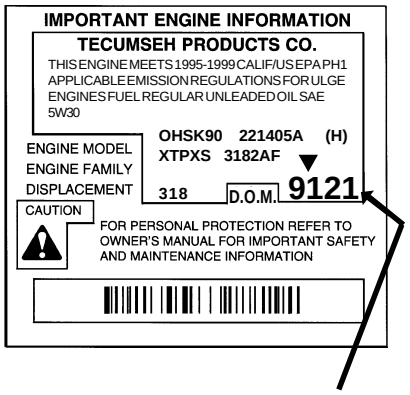
Illustration 1

OHHSK **HM/HMSK**



Arrows point to location(s) of Engine Identification Decal(s)

Illustration 2



Engine DOM (date of manufacture)

Illustration 3

MORE ENGINE ILLUSTRATIONS SHOWN ON BACK SIDE

Yellow Mark: If your engine has a yellow mark on the short fuel line as shown in illustration (1) it has already been repaired before you received it. No further action regarding this issue is required on your part.

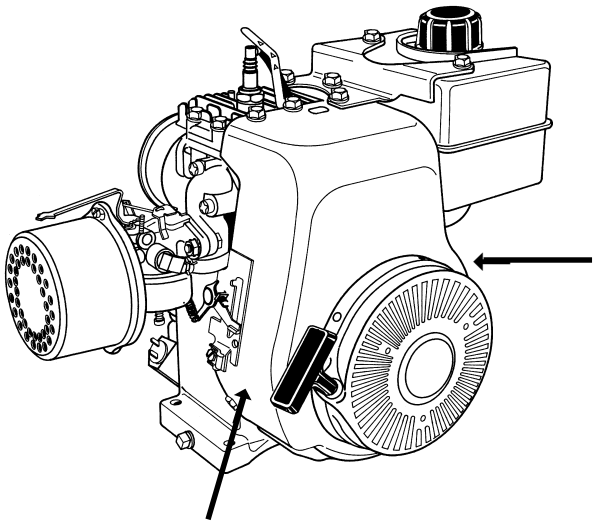
No Yellow Mark: Please call us toll free at **1-888-271-4048** ask for **ext. 1311** or the service bulletin desk reference service bulletin **#125.** When you call, we will arrange for the repair through one of our service centers in the USA or Canada. The service center will make this repair at **No Cost** to you. The desk is open Monday thru Saturday from 6 AM to 6 PM CST.

Thank you again for purchasing a Tecumseh powered product, and we apologize for any inconvenience this may cause you.

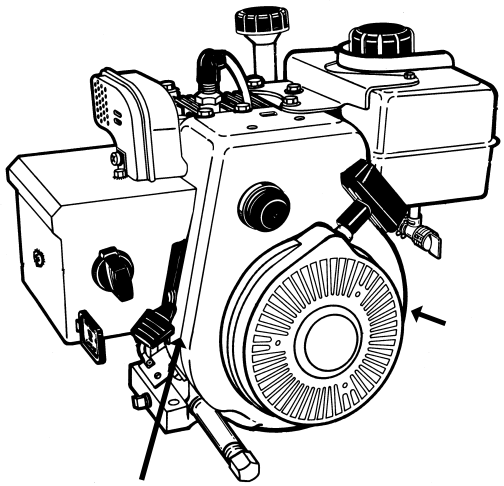
Regards,

Tecumseh Products Company

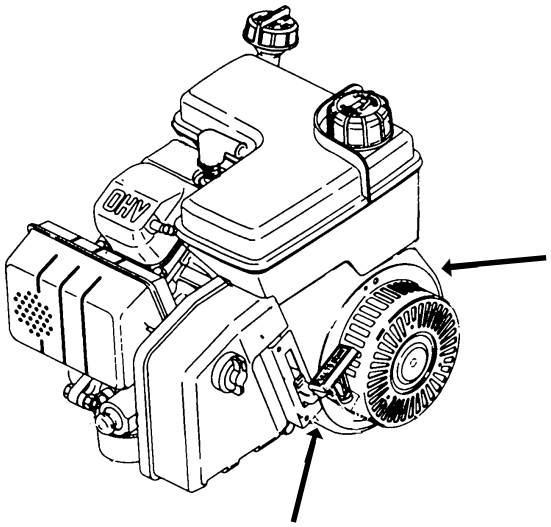
Arrows point to other location(s) of Engine Identification Decal(s)



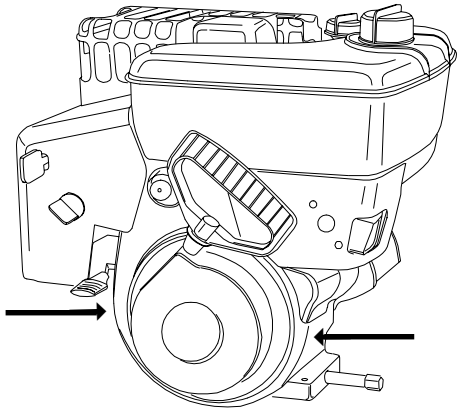
H's



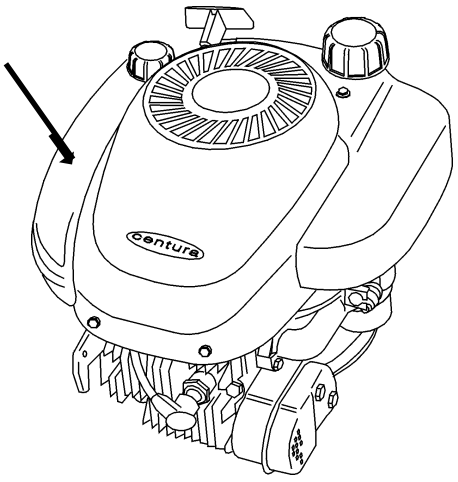
HSK/HSSK



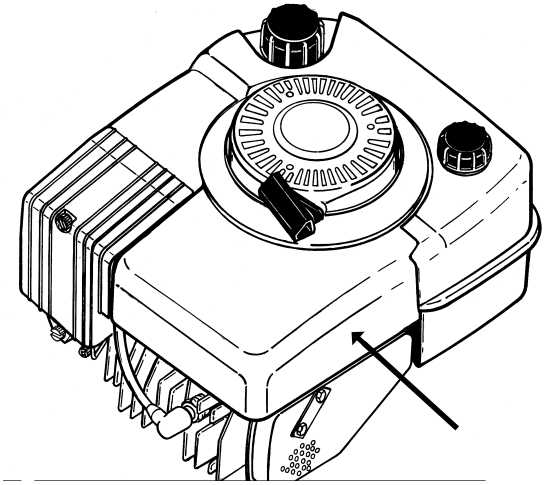
OHH



OHSK



LEV



VLV

The OPE Umbrella

Tecumseh Products Company, is a proud member of the Engine and Equipment Training Council (**EETC**). This Council is the organization that creates and updates the **OPE** test's. The tests are regularly administered by your regional, Engine Service Association (ESA) member and have become the industry's basic standard for qualified technicians. Please contact your Tecumseh Distributor to obtain a testing schedule.

OUTDOOR POWER EQUIPMENT
OPE TESTING

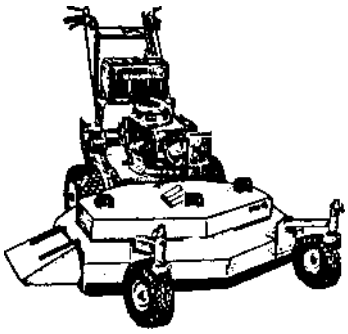
The benchmark standard for qualified technicians in the outdoor power equipment trade. These tests are developed by the EETC and administered by the ESA members.

EETC
Engine and Equipment Training Counsel

This Professional Organization is made up of outdoor power equipment manufacturers, dealers, distributors, service and training personnel, vocational and technical schools, national educational associations, and other interested industry and educational leaders. The council has established and promoted an industry sanctioned technician certification process for basic entry level certification.
The certification test are regularly administered through the regional ESA members.

ESA
Engine Service Association

The organization which administers OPE testing. They also developed and distribute the ESA-157 Warranty Service Claim form for the Outdoor Power Equipment market.



TECHNICIAN SHORTAGE

Skilled service technicians in the equipment and engine industry are in short supply. Prospects are not good for improving this shortage through traditional educational channels and with current educational processes. At a recent industry meeting, one equipment manufacturer indicated that their dealers were short more than 2,500 technicians to service their products. It is conceivable that the real numbers for the whole industry may be many times this figure.

The technician shortage is due to a number of complicated problems. A study done by a major university for the automotive service industry regarding why young people choose not to become service technicians, found these critical reasons:

- Mom and Dad
- Guidance Counselors
- Perception that it is a "dead-end" job
- Limited pay and benefits
- Lack of knowledge about what the industry has to offer

CHANGING THE PERCEPTION

You certainly can't blame parents for wanting the best future for their children. We must take the lead in changing their perception of our industry If the image of the technical service technician remains negative, then we have very little hope of developing a new generation of skilled service professionals.

Did you know that the average age of a service technician in a dealership today is 5 I years old? The challenge is clear. In order to change the perception of our profession and attract young people to our industry, we must begin to develop a career path for the young, entry level service technician. He needs to understand the potential in the industry – not just in terms of salary and benefits, but also in terms of increasing responsibility within a company and the industry. He also needs to have pride as well as self-esteem for his professionalism and knowledge of complex technical products and processes.

We, as an industry, must take advantage of the growth in the service sector by educating parents and counselors in the benefits of becoming a professional service technician. We must also insure that educational institutions offer the exact competencies our industry needs today and in the future.

YOUR CHALLENGE...

We need your help to insure that skilled professional service is available for the products we are selling today and developing for tomorrow. For as little as $175.00 a year, you can support the industry's efforts in insuring the availability of skilled service technicians and the availability and professionalism of the industry-approved educational institutions to teach industry-required competencies. Won't you please join us in this worthwhile endeavor and become a member of the Equipment and Engine Training Council. Your industry needs your support.

For More Information Call (512) 442-1788 or E-mail: eetc@eetc.org

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COMPLETE THE MEMBERSHIP FORM BELOW AND MAIL WITH YOUR CHECK TO:

Equipment & Engine Training Council
1946 So. IH-35, Suite 100-A
Austin, TX 78704
(512) 442-1788 • Fax (512) 442-1789

General Membership: $195.00
Dealer Membership $125.00

Name: _____ Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____

Update Seminar Technician Video Test

1. The New exhaust MCR camshaft will initially be used on the following models.
   A. HM & OHM C. OVRM & LEV
   B. VLV & OVM D. OHH & HMSK

2. The New 640259 high volume primer will need only ____ primes due to its ____ % increase in volume.
   A. 5 & 15 C. 3 & 20
   B. 3 & 30 D. 5 & 50

3. The new VSK engine is being introduced as:
   A. 3.8 HP
   B. 4 HP
   C. 3.5 HP
   D. 5.0 HP

4. The New composite float (632765) can be retrofitted to all applications where the original brass 632019 float was:
   A. True
   B. False

5. Piston ring lands and rings on the new emission piston are noticeably different from the standard non-emission piston:
   A. They are wider
   B. They are made of porcelain
   C. They are narrower
   D. There is no difference

6. The reason Tecumseh has redesigned the standard metal float bowl was:
   A. The original float bowl did not fit the Series 11 carburetor
   B. The original float rest was not large enough to prevent varnished fuel to stick
   C. The metal was not holding up with todays reformulated fuels
   D. To work with the new composite float which has a different profile

7. The new aggressive choke plate part number for an OHV13.5 - 17.5 would be:
   A. 640066
   B. 640261
   C. 640913
   D. 640011

8. The 40016A Intake valve stem seal for the OHH Series engine will not fit previously manufactured engines because:
   A. The valve stem dimension has also changed
   B. The cylinder head has been machined to accept
   C. The valve spring length has been changed
   D. It will hit the piston

9. Claims filed under the Flat Tire Prevention Program are sent to and reimbursed directly from Tecumseh?
   A. True
   B. False

10. The reason the new graphite head gasket for the large frame OHV will not interchange with the original 36737 metal gasket is:
    A. It is thinner and will cause valve damage
    B. The graphite gasket bolt pattern is different
    C. The metal gasket is in stock
    D. The cylinder head has been machined down to maintain compression ratio

11. The new 37342 Silicone Bead flange gasket has become standard on _____ applications.
    A. Snow King®
    B. Generator
    C. Walk Behind Mowers
    D. Tractor

12. The new OHV110-135 12V electric starter is noticeably different then its predecessor. It uses _____ bolts to fasten ?
    A. 4
    B. 2
    C. 3
    D. 0

13. One of the easiest ways to determine the difference between a Series 8 and a Series 11 is:
    A. The Series 8 idle restrictor cap will be black
    B. The Series 11 idle restrictor cap will be gray
    C. The Series 11 will have the larger volume primer
    D. The Series 11 idle restrictor cap will be black

14. The 120 Volt 37105 electric start was designed to fit on engines above_____ horsepower?
    A. 10
    B. 8
    C. 11
    D. 20

15. To distinguish the new 12 amp D.C. alternator from the 16 amp we have:
    A. Imprinted a 12 amp designation on both the alternator and regulator-rectifier
    B. Placed a yellow marking on both the alternator coil and regulator-rectifier
    C. Made it look completely different so we did not need to mark it.
    D. Made the connector end with a 4 wire plug in.

16. The new restyled fuel tank has a capacity of:
    A. 4 liters
    B. 4 quarts
    C. 2.5 gallons
    D. 3 quarts

17. Adhesive thread locker is now being recommended on the following series carburetor studs:
    A. Series 8 & 9
    B. Series 11 & VLV
    C. Series 7 & VLV
    D. Series 3 & 4

18. The Enduro VT video will be available:
    A. December 1999
    B. August 1875
    C. February 2001
    D. January 2000

19. The new 37407 bushing clips are being considered for other engine series:
    A. True
    B. False

20. What carburetor is being installed on the new OHM100:
    A. Series 8
    B. Series 7
    C. Series 6
    D. Series 3

21. On the new TC300 carburetors, both the idle and main jets are fixed and cannot be serviced:
    A. True
    B. False

22. What feature was added to the MST transaxle to aid in disassembly ?
    A. Quick release latched
    B. Internal relief
    C. Longer bolts
    D. Pry points

23. The new longer 792177 brake bolts can be installed on all MST and VST transaxles ?
    A. True
    B. False

24. All greased filled transaxles require a 788098 o-ring to be installed on the neutral start switch?
    A. True
    B. False

25. The substance which may be found inside the float bowl of a brand new carburetor may be ?
    A. Tri-Flow
    B. Machining Oil Residue
    C. A powdered graphite
    D. Lead shaving

26. The first step used to diagnose a hunting or surging engine is to ?
    A. Replace the spark plug
    B. Remove the float bowl to inspect the carburetor
    C. Adjust the idle and high speed mixture screws
    D. Static test the governor system

27. To add lubricant to the new 301 transmission you must?
    A. Remove the fill plug and fill completely to the top
    B. Remove the fill plug and fill unit half way
    C. Remove the fill plug and fill 1/4" below the first thread
    D. None of the above

28. The new SilentTrac 200 will allow internal service to some of its components?
    A. True
    B. False

29. Ultra Fresh Gasoline preservative will help reduce fuel varnish and gum deposits for up to?
    A. 1 year
    B. 2 years
    C. 3 years
    D. 50 months

30. The H.O. in the LEV 120 HO stands for:
    A. Horizontal Overhead Valve
    B. High Output
    C. Heavy Operation
    D. High Option

31. The part number of the basic Tecumseh Tool Kit is?
    A. 670195E
    B. 671025
    C. 671275
    D. 672115D

32. The 792144 brake spring was introduced to?
    A. Make it easier to engage the brakes
    B. Help release the brake lever more consistently
    C. Aid in the retention of the parking brake
    D. Apply an even pressure for more consistent brake pad wear

33. The two engine features our new 37350 Low-Tone muffler works with is?
    A. Low oil sensor and governed idle
    B. Remote throttle control and illuminated rocker
    C. Extended run fuel tank and climate guard
    D. Only with climate guard

34. The new oil vacuum (part No. 670354) is available with an optional heavy duty 3 gallon tank. What is the Part No. for the optional tank ?
    A. 670367
    B. 670368
    C. 670354
    D. 670381

35. The change made to the MCR on the OHV13.5 - 17.5 camshaft was:
    A. A new stronger spring
    B. Hardened cam lobes
    C. A larger pin
    D. A higher density yoke

36. What percentage of returned solid state CDI modules were not found to be defective ?
    A. 50%
    B. 70%
    C. 60%
    D. 80%

37. When cleaning the VLV carburetor what item is commonly overlooked before soaking?
    A. Removal of the main nozzle (emulsion tube)
    B. Removal of the o-ring behind the main jet
    C. Removal of the inlet needle seat
    D. Removal of the float

38. Tecumseh Products has now returned to a _____ prime start on all LEV, VLV and OVRM with exhaust MCR engines at temperatures above 55^0F (13^0C)?
    A. 1
    B. 5
    C. 3
    D. 2

39. What type of lubricant is used on the input needle bearing on MST model transaxles ?
    A. Bentonite
    B. EP grease
    C. 10W40
    D. Kryptonite

40. Service Bulletin 125 was released regarding the following information.
    A. Rich running HM, HMSK, OHSK above 7000 feet
    B. Hot restarting on LEV120-361052B engines
    C. Emission Control Systems
    D. A fuel line safety recall

41. The suggested spark plug to be used in all VLV engines is ?
    A. J8C
    B. RJ19LM
    C. RN4C
    D. RJ17LM

42. All Tecumseh manufactured engines have a compression release of one type or another (MCR, BCR, RCR).
    A. True
    B. False

43. The 792001 MST o-ring is located ?
    A. On the axle shaft
    B. On the input shaft above the lower needle bearing
    C. On the input shaft directly under the lower needle bearing
    D. The 792001 does not fit in the MST

44. If a VLV engine mounted to a AL-KO rider is found to have excessive wear to the bottom thrust bearing, repair using a new flange, crankshaft and
    A. A new designed flange gasket which is thicker
    B. A new cylinder and crankshaft assembly
    C. A thrust washer
    D. Both A and C

45. If an electric starter is received with the return spring becoming trapped between the drive nut and armature shaft, a quick fix is to
    A. Replace the entire Bendix assy.
    B. Replace the starter assy.
    C. Add washer part number 650848
    D. Clean and lubricate the components

46. When installing the Europa 16630041 starter kit, a new _____ rope should also be installed.
    A. 90" (2300 mm)
    B. 42" (1067 mm)
    C. 100" (2540 mm)
    D. 36" (914 mm)

47. One of the main causes of an overheating engine is
    A. Use of the incorrect grade of engine oil
    B. The fuel had become old and stale
    C. Excessive engine R.P.M.
    D. The intake and cooling fins being blocked by grass and debris

48. The one and only function of the flywheel brake assembly is to reduce the amount of time the engine needs to come to a complete stop.
    A. True
    B. False

49. The new "D" governor system on GEO-TEC horizontal shaft engines differ from conventional systems by?
    A. Connecting the governor spool directly to the governor shaft.
    B. Connecting the governor lever directly to the throttle shaft without a link
    C. The governor gear flyweights are made from a polymer material
    D. The governor system is completely electronic

50. Dirty or saturated air filter elements may cause erratic engine running ?
    A. True
    B. False

Answer Sheet for Video Test

1.	A	B	C	D	26.	A	B	C	D
2.	A	B	C	D	27.	A	B	C	D
3.	A	B	C	D	28.	A	B	C	D
4.	A	B	C	D	29.	A	B	C	D
5.	A	B	C	D	30.	A	B	C	D
6.	A	B	C	D	31.	A	B	C	D
7.	A	B	C	D	32.	A	B	C	D
8.	A	B	C	D	33.	A	B	C	D
9.	A	B	C	D	34.	A	B	C	D
10.	A	B	C	D	35.	A	B	C	D
11.	A	B	C	D	36.	A	B	C	D
12.	A	B	C	D	37.	A	B	C	D
13.	A	B	C	D	38.	A	B	C	D
14.	A	B	C	D	39.	A	B	C	D
15.	A	B	C	D	40.	A	B	C	D
16.	A	B	C	D	41.	A	B	C	D
17.	A	B	C	D	42.	A	B	C	D
18.	A	B	C	D	43.	A	B	C	D
19.	A	B	C	D	44.	A	B	C	D
20.	A	B	C	D	45.	A	B	C	D
21.	A	B	C	D	46.	A	B	C	D
22.	A	B	C	D	47.	A	B	C	D
23.	A	B	C	D	48.	A	B	C	D
24.	A	B	C	D	49.	A	B	C	D
25.	A	B	C	D	50.	A	B	C	D

Should you need a new label for any reason such as replacing a recoil housing, please fill out a copy and fax it to us. We will promptly mail you a new engine I.D. Tag.

When replacing the blower housing on an EPA/CARB certified engine with the serial number of 7213 or greater (6001 or greater if in California), use this form to fax an order for a replacement engine identification label. This label is supplied no-charge. Fill in the required information below and fax it in to the Tecumseh Customer Service Department at (262) 377-4485. If you have any questions, feel free to call a Service Representative at (262) 377-2700.

ENGINE INFORMATION REQUIRED:

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Family Number: _____

Displacement: _____

DOM (Date of Manufacture): _____

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