

# **TECUMSEH**

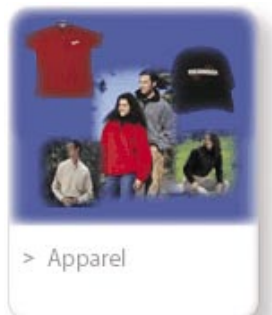


## **Update** **2005**

**FACTORY TRAINING**

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(back view)



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## 4-Cycle

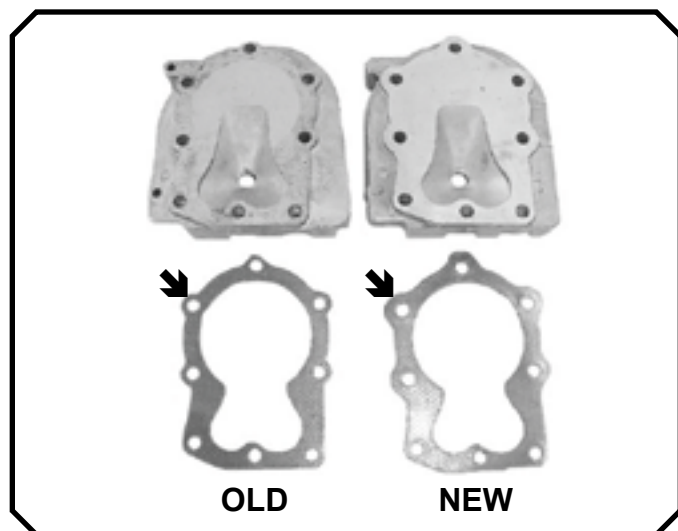
### Piston Change for Small Frame Engines

We are now going to have elliptical shaped pistons on all of our small frame engines. We will be using the piston technology we designed originally for the LEV engine. These pistons are shaped to conform better to the cylinder walls, which will decrease the potential for blow by, thus improving engine emissions. The piston skirts will also have the "T" coat on it to help reduce friction rather than the chrome coating that was used up to this point. The models affected by this change include the LH195SA, LH195SP, H35, OH195EA, OH195EP, and the OVRM120.



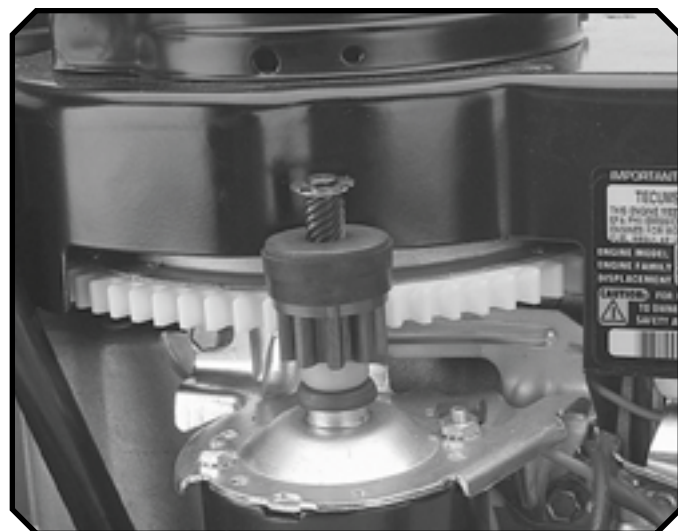
### Change to LV195EA Heads

The head bolt bosses for these engines have been beefed up to help maintain gasket clamping forces. By increasing the material around the head bolt area the head surface will remain true when the bolts are tightened. The benefits of this are improved cylinder bore roundness, which in turn helps enhance emissions on the engine. This was done as a running change and the cylinder, head, and gasket are affected. The head and gasket will have a new part number and can be used with the old cylinders. The old cylinder head and/or gasket cannot be used with the new cylinder. Be sure to use the model and specification number of the engine to look up the proper part numbers.



### Quiet Start Caution

In the 2003 Update Book we introduced the quiet start electric starter for our LEV engines. The plastic pinion gear on the starter may only be used in combination with engines which are equipped with a composite ring gear on the flywheel. The gear cannot be used with the older steel gear flywheels. Doing so will result in damage to the pinion gear. To ensure the proper starter and flywheel are being used together please look up parts using the correct engine model and specification number.





## A black and white photograph showing a close-up of the engine compartment of a vintage vehicle. The image focuses on the carburetor and fuel system. A fuel line with a clamp is visible, leading from the bottom right towards the carburetor. Various mechanical parts, including bolts, nuts, and metal brackets, are visible. The engine block is partially visible in the background. The overall scene is a detailed view of the engine's internal components.

Three bottles of engine oil are shown side-by-side. The first bottle on the left is labeled 'TECUMSEH 4 Stroke Engine Oil'. The middle bottle is labeled 'SNOW KING SAE 5W30'. The third bottle on the right is also labeled 'SNOW KING SAE 5W30'. Below each bottle is its corresponding part number: 730225A, 730226A, and 730263.

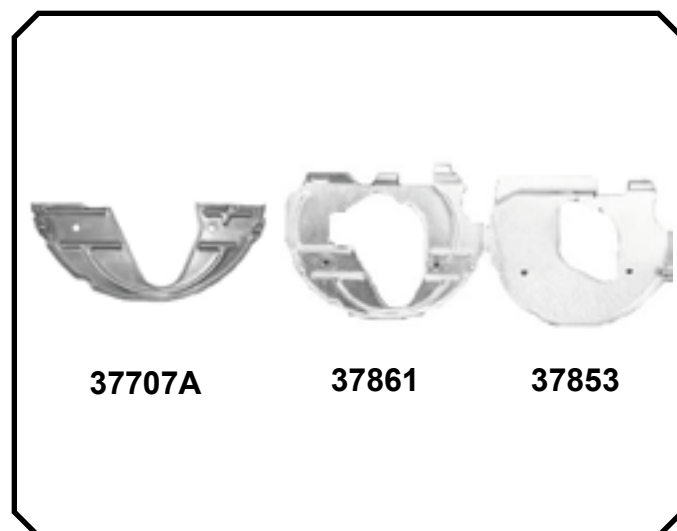
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## 4-Cycle

### Baffled Over Baffles

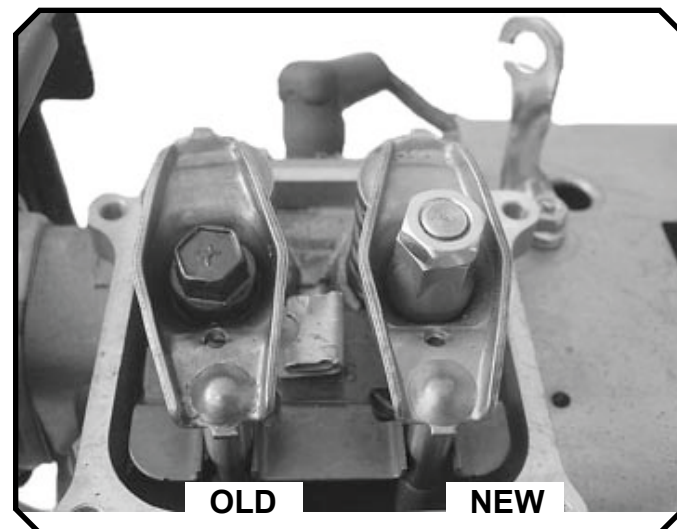
There have been many recent changes to the blower housing baffles (backing plates) on our medium frame engines. Many of the changes had to do with the application the engine was being used on, however it left some confusion as to what parts went with what engine. We have developed this chart to clarify this confusion.

Engine	Old P/N	New P/N
TVM220	37707 and 35424	<b>37707A</b>
OH358SA/EA	N/A	<b>37861</b>
OH318SA/EA, LH318SA, HM80/100	37706A, 37706, and 36460	<b>37853</b>



### OHM Rocker Arm Stud Change

The rocker arm studs for the OH318 (OHM/OHSK) engines have been changed to match those on the large frame Enduro style engine OHV/OV. This makes it easier to adjust the valves, by allowing all of the adjustments to be made from the top of the rocker arm. The torque setting for the jam nut on the rocker arm is 190 inch pounds. You will first see this change on the snow version of the OH318 this year, followed by the summer models, being produced in 2005. The engine kit available for the large frame vertical shaft engines has been superseded to part number **730636A** and will now work for all OH318 and OV490 engines. As a reminder .004 in (10mm) is the valve clearance setting on all current Tecumseh OHV engines.



### Standardized Oil Pump

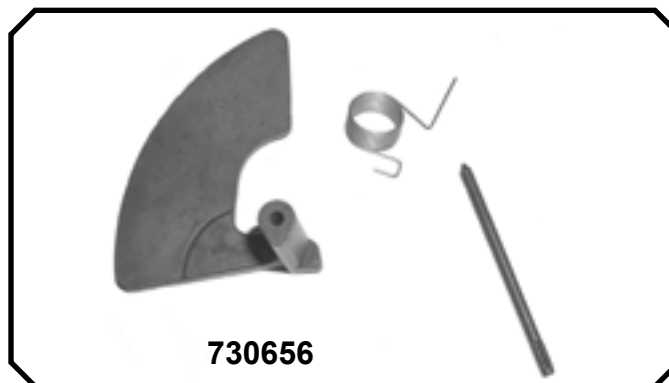
OV358 (OHV13) engines will now have the same gerotor style oil pump as the larger OV490EA. This change was made to standardize components and provide a more uniform pressure at all temperature variations. The mounting flange has changed to accommodate the thinner oil pump. This was done as a running change so when ordering any replacements parts always use the model and spec number for the engine you are working on. New replacement mounting flanges, part number **37523** will come equipped with the thinner pump included.



## 4-Cycle

### MCR Repair Kit for Large Frame OHV

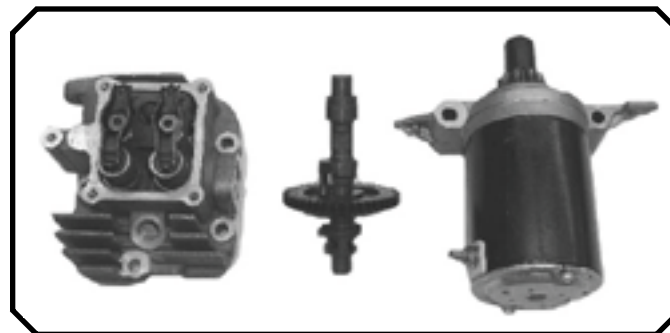
Until recently, the only models that had a serviceable Mechanical Compression Release (MCR) on the camshaft were the OHH and TVT engines. Now we have developed a kit to service the MCR on engine models OHV13.5-18 and OV490EA. This kit was designed to allow technicians the option of replacing worn or damaged components of the MCR without replacing the complete camshaft. The part number for the kit is **730656**, it includes the yoke, spring, hinge pin, and instruction sheet.



### MCR and Starters

Starting problems can sometimes be difficult to diagnose. A faulty MCR could cause difficult starting and/or starter failure. Some simple steps to follow when troubleshooting starter problems are to first check if it failed because of high compression. When an engine is exhibiting compression above 100 psi, the first item to look at is the valve clearances. If the valve clearances are within the required specifications the next step would be to verify MCR function.

To check the MCR "action" simply remove the valve cover, and spark plug. With unit installed on the equipment, rotate the engine clockwise from the flywheel side and watch right at the start of the compression stroke. The MCR should "bump" the exhaust valve slightly. Following these troubleshooting steps will help lead you to a quick and accurate diagnoses.



### Snow King Engine Electric Start Conversion

Up until recently, all Tecumseh Snow King Engines came with electric start provisions. Starting this year, some LH195SA models will not include a ring gear on the flywheel. To accommodate customers who wish to have an electric starter on these engines, we have set up Starter Conversion Kits. These kits will contain all of the necessary components to convert the engines to electric start and include an 18 watt alternator for any future need of a light kit.

Kits Include the Following Parts					
Engine Model	Electric Start Conversion Kit Number	Electric Starter	18 Watt Alternator	Flywheel with Ring Gear 18 Watt	Alt Mounting Hardware
LH195SA/SP (HSSK50)	730266	33290E	611111	611203	2 @ 650873
OH195SA/SP (OHSK50-70)	730267	33290E	611111	611216	2 @ 650873
LH318SA LH358SA (HMSK 80 -110)	730268	33329E	611111	611093	2 @ 650873
OH358SA OH318SA (OHSK 80-130)	730269	37105	611111	611093	2 @ 650873





## 4-Cycle

### Oil Filters - More Than Meets the Eye

Many times a customer will look at an OEM oil filter and compare the non-OEM alternative and think that they are equal. From the outward appearance it is difficult to tell the difference. Based on that assumption they will purchase the lower cost filter. In reality, the non-OEM filter may be lower cost because some of the features have been eliminated from the design or the materials are not on an equivalent scale. Tecumseh branded oil filters meet the necessary requirements for our engines and have other safeguards to ensure longer engine life.

Some of the features to look for on oil filters include:

- **Shell Thickness** - The shell for the filter must be thick enough to withstand a minimum of 200 psi, to provide protection for pressure spikes. Tecumseh filters handle a minimum of 300 psi.
- **Anti-Drain Back Valve** - All filters have some type of anti-drain back valve to prevent contamination from going back into the engine when the engine is shut down. A good filter must have a valve that will seal to prevent drain back, but also will not create too much back pressure. The valve also allows the filter to retain enough oil to prevent dry start ups.
- **End Caps** - The end caps on the filter are important. A poorly designed end cap could allow contaminants to slip past the filter. Most filters, including Tecumseh's, have steel end caps securely glued to the filter. Tecumseh filters bond the filter to the end caps with a thermo set plastisol to prevent leakage past the filter. Some major brand aftermarket filters will use cardboard end caps, which can leak and also prevent the anti drain back valve from seating.
- **By-Pass Valve** - These valves are spring loaded and pressure sensitive. Many filters include this feature but some do not. The purpose of the by-pass valve is to allow oil to pass through the filter if the element becomes restricted, or if the engine is being started in extremely cold weather. This could happen if regular oil change schedules are not followed, or if a lighter weight, winter blend oil is not used in colder temperatures. This oil will not be filtered but will provide lubrication to lessen the potential for engine failure.
- **Element** - Most filters have a Cellulose (paper) media as the base element. In addition the manufacturer may add cotton or synthetic fibers embedded into the Cellulose as an additional filtering material. The filters using the Cellulose with the synthetic fibers provide better filtration according to SAE testing. Tecumseh brand filters use a synthetic media for the best filtration.



SHELL THICKNESS



ANTI DRAIN BACK VALVE



END CAPS



BY-PASS VALVE



ELEMENT

An engine that fails as the result of non-Tecumseh parts being used will not be considered a warranty situation. A few extra dollars for a quality filter which was designed for the engine it is used on can save a lot of money down the road. The fold out poster inserted in this book can be displayed as an educational tool for your customers.

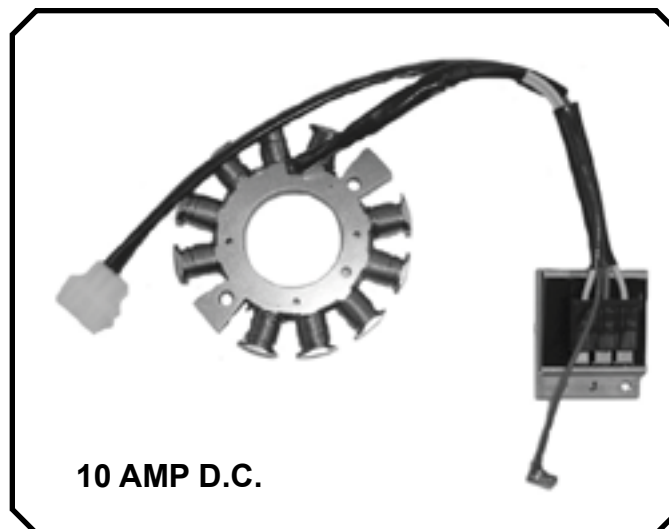
## 4-Cycle

### New 10 Amp D.C. Alternator

A new alternator has been developed to provide maximum output when the engine is running at a low speed. The development of this product was prompted by the European regulations that a riding lawnmower engine cannot exceed 3200 RPM. The standard alternators would not produce enough current at that speed to power lights and an electric clutch. Through full wave rectification, the new alternator will produce a minimum of 10 amps of D.C. power at 3200 RPM. The flywheel in this system is the standard 5 magnet flywheel instead of the more expensive 6 magnet flywheel previously used on the 12 amp system with half-wave rectification.

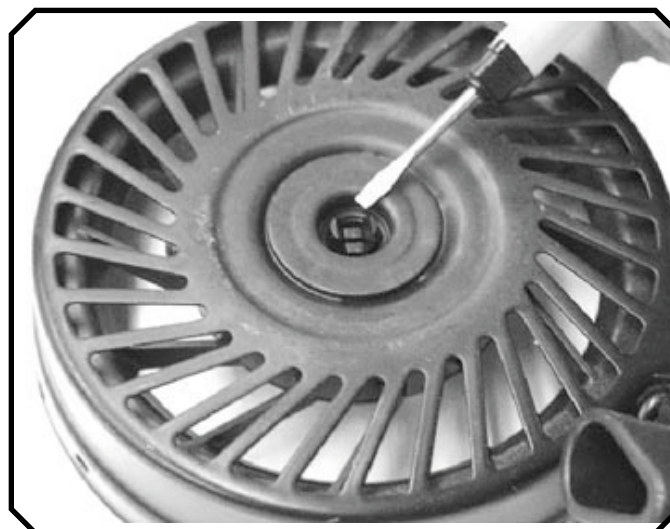
RPM	Volts D.C. Typical	Volts D.C. Minimum
2000	5.3	4.5
2500	8.0	7.0
3200	11.5	10.0
3600	12.7	12.0

*Please see Reference Section in the back of the book for additional electrical references.*



### Recoil Starter Tip

If you run into a situation with a new recoil starter (whether it's on an engine or a service replacement) where the starter dogs do not extend, there may be a simple fix. A small spring clip holds the retainer for the pulley. If the clip is not snapped in securely it will not apply adequate pressure to allow the starter dogs to extend. To fix the problem, take a small blade screwdriver and insert it into the notch in the center of the clip. Turn the screwdriver a small amount. You should hear a click as the clip seats into place. This may be done with the recoil in place on the engine. On some models the clip may be covered by a round decal that will need to be removed. If the decal needs to be replaced, order part number **36695**.

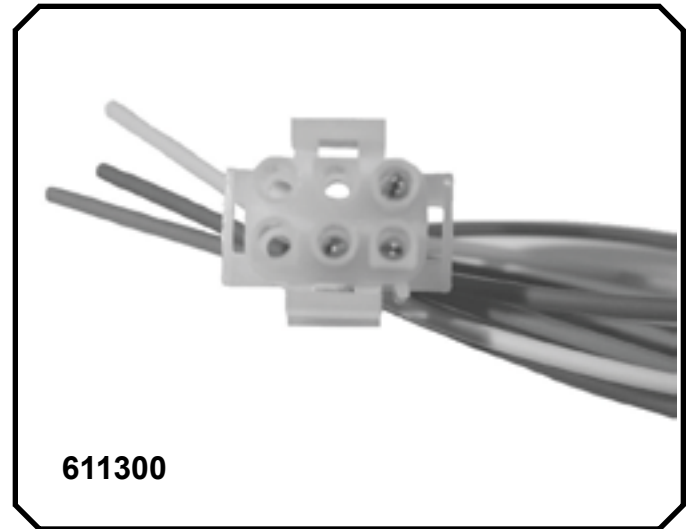


## 4-Cycle

### Added Wire Harness Connector

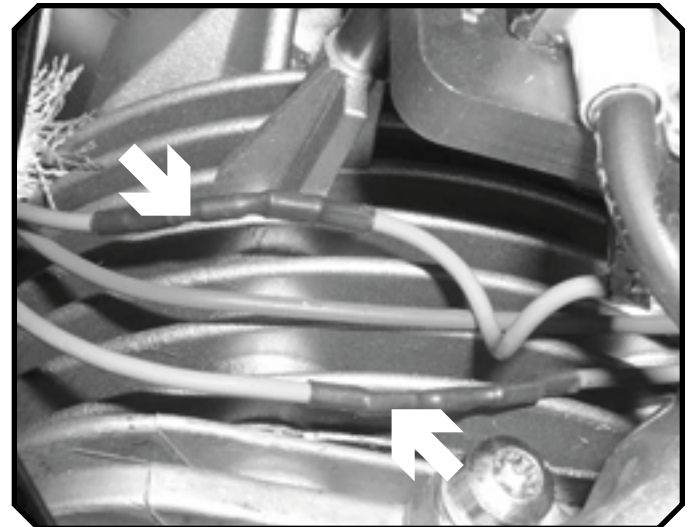
Last year we introduced five standard wiring harness connectors. We have added a six-pin connector that can be used with engines equipped with a 3/5 split alternator system. The part number for this connector is **611300**.

See Reference Section in back of book for complete list of connectors available.



### Troubleshooting on Twin Cylinder Wiring

We often receive calls from dealers who are experiencing a misfiring or low power situation from one of our twin cylinder engines. What is easy to miss are the diodes on each of the ground wires coming off the ignition modules. The purpose of the diode is to prevent current from feeding back through the wire. If the diode is bad the ignition will not function properly. The diodes can be seen when the blower housing is removed. A simple check with a continuity tester will tell you if the diode is good. The part number for the wiring harness is **37642**.



## 4-Cycle

### The Twin Muffler is On The Way!

The Tecumseh twin cylinder engines will have muffler options to fit applications of all kinds beginning March 2005. These kits will include all components needed to assemble.

#### Kit Number 730658

- Muffler installed vertically, discharge to the left.

#### Kit Number 730659

- Muffler installed vertically, discharge to the right.

730658



730659



#### Kit Number 730660

- Muffler installed horizontally, discharge to the left.

#### Kit Number 730661

- Muffler installed horizontally, discharge to the right.

730660



730661



An optional exhaust deflector and spark arrester are available.



36596  
DEFLECTOR



36411  
SPARK  
ARRESTER



## 4-Cycle

### ESP and SST Systems

Through various enhancements, Tecumseh Power Company has engineered one of the easiest starting, highest quality, best performing 4-Cycle engines for rotary lawnmower applications.

These features have been engineered to offer you and your customers a premium product by keeping our long running tradition of easy starting and superior performance.

The ESP (Easy Start Performance) and SST (Sure Start Technology) systems include these features.

#### Large Recoil Starter

Increased Leverage  
Easy Pull Starting



#### Kleen Fuel™ System

Traps Debris and Water in the Tank  
Enhances Free Flow of Gas  
Micro Screen Rids Moisture During Operation



#### Capacitor Discharge Ignition

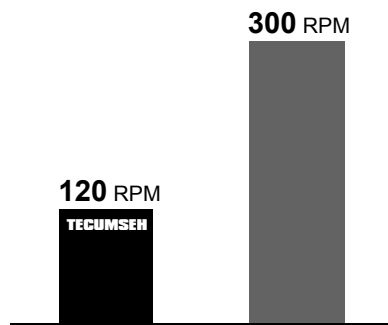
A Faster Response Time  
and Higher Energy Output  
Results in Quicker Starting.



#### Accu-Prime™ System

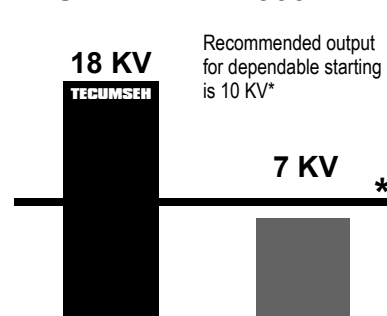
Consistent Cold Starting  
Positive Priming  
Auto-Enrichment Carburetor

#### LOW TURN-ON SPEED



Tecumseh's CDI system has lower turn-on speed that means less pull to start the engine.

#### HIGHER KV AT 300 RPM



Tecumseh's CDI system produces more KV output than competitive inductive ignition systems for responsive starting.

Recommended output for dependable starting is 10 KV\*

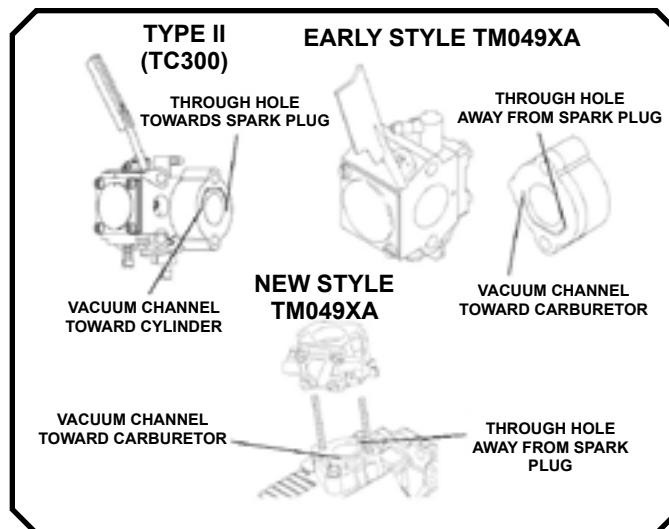
\*



## 2-Cycle

### Changed TM049XA Spacer Block

Last year we introduced the TM049XA. Early on in its production, we identified an enhancement which would reduce the risk of hot restarting issues. A change was made to eliminate the through bolts attaching the carburetor and spacer to the block. The new spacer will bolt directly to the block and then the carburetor will bolt to the spacer. The new spacer and cylinder are not interchangeable with the earlier version. The revised 694782 Technician's Handbook will show all three variations.



### Revised 694782 Technician's Handbook

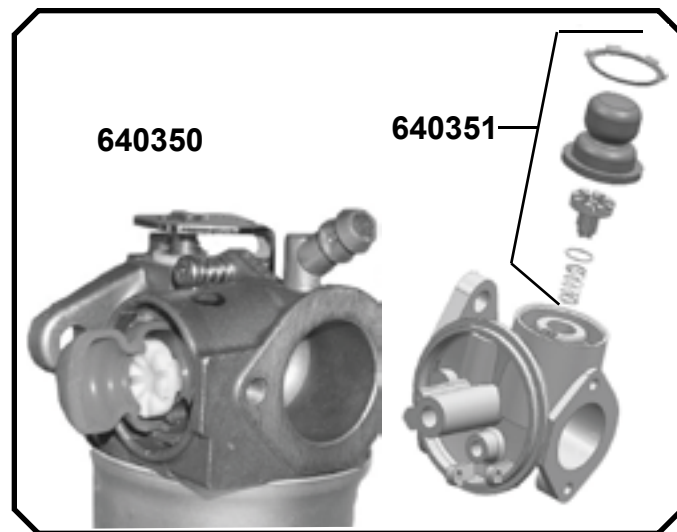
The Technician's Handbook for TC engines has been updated to include the new TM style engine. There are many unique differences in the redesign of this compact, two-cycle engine; compression release, two-piece crankshaft, carburetor spacer block orientation and split crankcase design to name a few. Registered manual holders can look for this book to arrive the first quarter of 2005.



## Carburetors

### Series 12 Carburetor

A new carburetor, part number **640350**, has been released to produce improved starting on our 5 to 7 horsepower walk behind mower engines. The carburetor was designed to eliminate human error from the priming process. The Accu-Prime™ system consists of a spring loaded plunger behind the primer bulb that will create a full seal each time the bulb is depressed no matter what angle it is depressed at. Testing has shown a 15% improvement in average prime volume. The Series 12 carburetor body is similar to the Series 11, which uses an extended run fuel well to aid in starting. The exception is the primer area, which includes changes to the body of the carburetor that do not allow the new primer components to retro-fit older carburetors. The primer assembly will be available as a kit to service the carburetor under part number **640351**. This kit will include the primer bulb, retaining ring, plunger and spring.



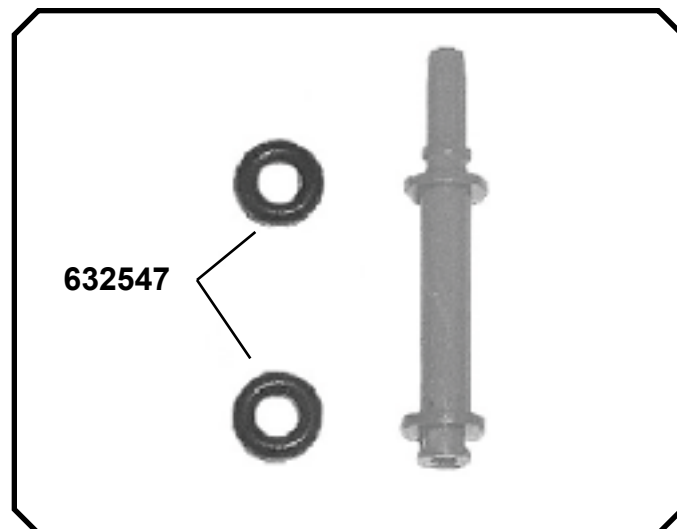
### Float Bowl Kits

The Vector and Series 7 carburetors were designed for easy service. All of the main components are located in the float bowl and therefore the carburetors can be serviced without having to remove the whole carburetor from the engine. The chart in the Reference Section, which is located in the back of the book, shows the part numbers for the bowl kits of each engine that uses this style of easy to service carburetors.



### New "O" Ring

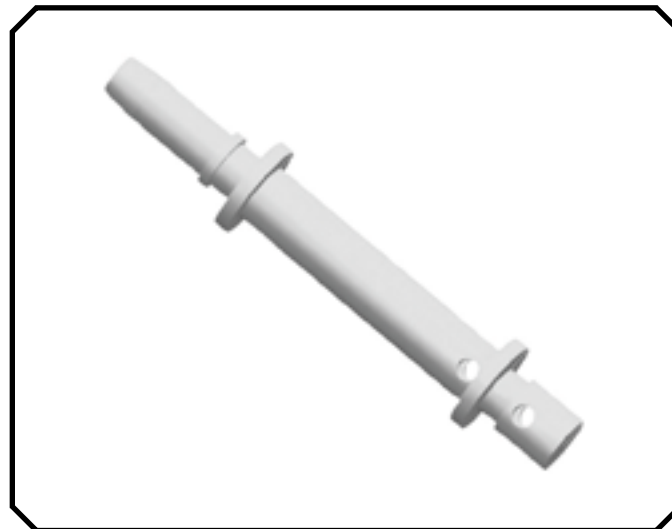
Blends of gasoline are continually changing and in many cases MTBE is being replaced with an ethyl alcohol additive. This additive is sometimes more aggressive and can cause many of the non-metallic components within a carburetor to become deformed. We are continuously working to adapt our fuel sensitive components to the changes in gasoline. The latest change is in the material for the 'O' rings on the main nozzle (emulsion tube). The new material is still flexible but has a much higher resistance to ethyl alcohol. This change was made as a running change and any carburetors produced today will have this upgrade.



## Carburetors

### Main Nozzle Tube

Some equipment applications powered by OH195 engines may utilize a main nozzle tube that is not typical of ones used on Tecumseh carburetors. Engines that experience a high amount of load and vibration, such as generators and pressure washers, may use a tube that picks up fuel from a hole located on the side of the tube. When viewing the tube installed in the carburetor this hole will not be visible. On some occasions people believed this to be a flaw and have drilled a hole through the bottom of the tube. This of course will cause run issues with the engine. This style of tube has also been used previously on some HM model engines for similar reasons.



### Primer Bulb Change

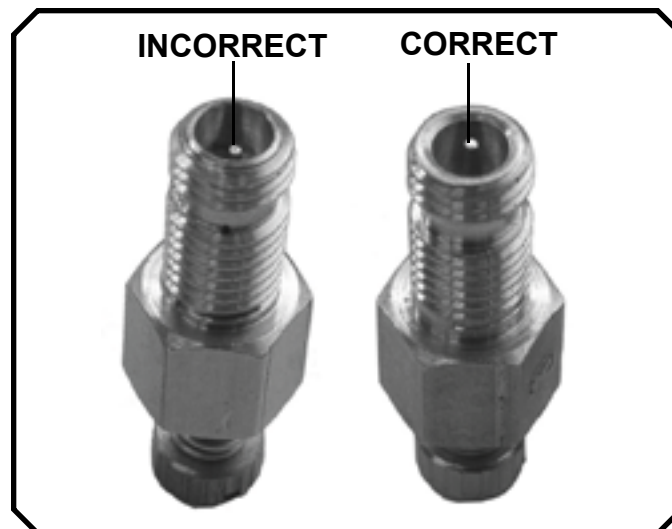
The primer bulb (**632433**) used on the Series 6 carburetor has been superseded to a **632433A**. The Series 6 carburetor was used mostly on our TVXL840 model engines, and was a vented 'derby hat' style bulb. The new bulb is red, and has a stepped hour glass shape, noticeably different in appearance from the old one. The capacity of the replacement bulb is less than the older bulb so it may require an additional prime when starting the engine. A 5X decal will be packaged with the replacement. Please place the decal on the blower housing near the carburetor for the customer's awareness.



### Pre-Emissions Carb Kits and Adjustment Needles

We have discovered some main adjusting screws, which have been improperly machined having the hole for the high speed adjustment needle drilled into the brass at a slight angle. This would cause issues with inconsistent high speed mixture adjustments and poor overall performance. The vast majority of the affected parts were captured and repaired at the factory, however, the possibility exists that some could have made it into the field. The carburetor repair kit affected is part number 31840.

Identifying the affected adjusting screw can be done while in packages. Look at the tip of the adjustment needle. It should be nearly flush with the end of the brass nut. Please contact your source of supply with any affected product found in the field.



## Carburetors

### Carbs for RV Applications

It has been found that some OHH65 / OH195 Power Sport engines may exhibit run quality issues over rough terrain. The performance concern includes sluggish acceleration, reduced overall power, increased fuel consumption, and spark plug fouling. This scenario is the result of fuel sloshing over the bowl vent and momentarily plugging it off. This brief rich running condition is the result of large 'gulps' of fuel traveling up the main nozzle.

The fix is a changed carburetor part number **640346**, that has been developed to improve its ability to consistently deliver fuel over rough terrain. The float dampening spring has been removed from the carburetor and an extension tube has been added to the bowl vent passage. This repair is only to be made to units that are exhibiting run quality issues over rough terrain.



## Tools

### TC/TM Ring Compressor Tool

The **670391** ring compressor tool can be used on both TC and TM style engines. Center the sleeve in the cylinder bore and place the piston in the sleeve portion of the tool with the rings offset and away from the gap. Press the assembly into the cylinder bore until the piston skirt clears the tool. On the TC style engine the ring compressor can be removed by withdrawing it from the cylinder over the connecting rod. The TM style engine has a two piece crankshaft pressed together with the connecting rod between the two pieces so it is necessary to slide the connecting rod between the gap on the open end of the tool to remove the ring compressor.

**670391**

### Blade Holder

Tecumseh has added to our tool catalog the Blade Buster®. This new blade holder can be used for rotary and riding mower applications. This tool, part number **670388**, is quick and easy to use and extremely durable. It will secure the blade from turning in either direction as opposed to using just a C-clamp, which only prevents it from moving one direction. You may find numerous other uses for this tool as well. The blade holder is a great tool for both technicians and the Do-it-Yourself homeowner.

**670388**

### Tire Gauge

We now have a tire gauge available through our tool catalog, designed for vehicles in the Outdoor Power Equipment industry that use tires with lower air pressure. The Tecumseh Tire Gauge, part number **670392**, will measure from 1 to 20 psi in one-pound increments. It will allow the user to achieve an accurate reading on tires for riding lawnmowers, go karts, ATV's and similar types of applications. It is the size of a pen and includes a clip for easy carrying and storage.

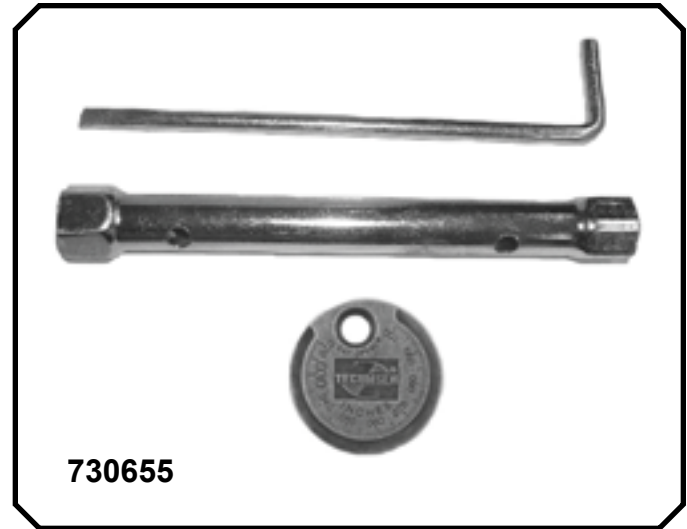
**670392**



## Tools

### Spark Plug Wrench

As part of our expanding line of tools and kits for homeowner maintenance we now have a handy spark plug wrench. The wrench is double sided to allow its use on 5/8" and 13/16" size spark plugs, covering any spark plug used in Tecumseh Engines. The 'T' handle has a slotted end that may be used as a screw driver. This new tool comes in a kit, part number **730655**, which also includes a spark plug gap tool (**670256**). The kit will come as a bubble pack to be displayed on your parts display rack.



### Tool Book Revised

The Tecumseh Service Tools Book, part number **694862**, has been revised with an up-to-date list of all the specialty tools available. The layout of the book has also been changed to group related tools together. The sections will include tools for valve service, diagnostics, Torx, measurement, removal, oil seals, transmissions, transaxles, and general repairs.

The Engine Tool Kit, part number **670195**, has also been updated. All Authorized Tecumseh Service Dealers are required to own this kit. The kit includes the basic specialty tools necessary to service current Tecumseh engines, including seal protectors/installers, knock off tools, fuel line removal tool and our popular carburetor tool.



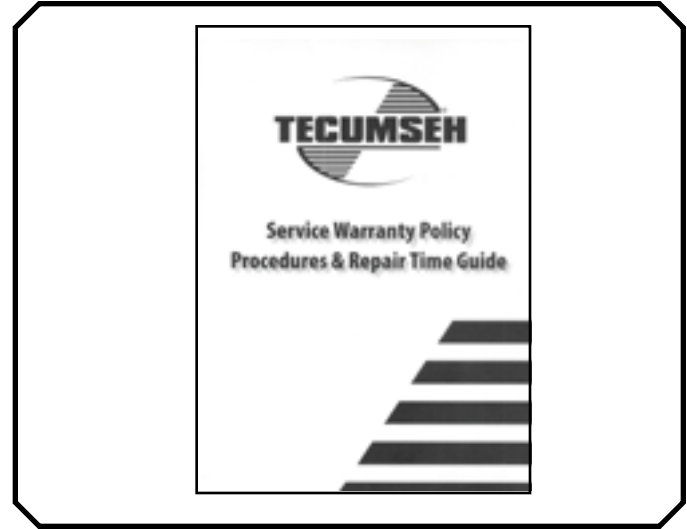
## Miscellaneous

### Service Warranty Policy Procedures & Repair Time Guide

By now all dealers should have received this book. The purpose of this book is to provide an "all-in-one" resource for the service dealer to find answers to warranty questions, to aid in accurate completion of warranty claims, and to help decrease the turnaround time for the reimbursement to the dealer.

The manual includes:

- **Service Warranty Policy** - Tecumseh Power Company's statement of warranty coverage on both engines and drive train units.
- **Service Warranty Procedures** - Procedures and guidelines to assist in filing warranty claims.
- **Product Label Identification** - An aid to support the reading and understanding of our product identification labels.
- **Warranty Claim Instructions** - Step by step instructions on entering the required information needed for claim submission.
- **Repair Time Guide** - The guide uses average times needed for a trained technician to complete the repair. These times take into consideration the repair plus items such as diagnostics, parts look-up, clean up, and test running. The guide does not cover all possible repairs, but a majority of the most common warranty occurrences.



### PartsManager Pro Update

Starting in 2005, ProQuest Media Solutions will be the exclusive electronic parts catalog supplier for Tecumseh. By now all of our dealers should have received a trial CD and hopefully have been able to test the new program. We chose PartsManager Pro because it can offer superior functionality, internet capability, and lower subscription costs.

PartsManager Pro also allows the user to manage multiple jobs at once, search across multiple OEM's, create favorites for often accessed pages or repair jobs, create a complete quote and print it out or e-mail it, and many other helpful features. PartsManager Pro works with most of the large dealer management systems and more are being added all of the time. If you have questions regarding PartsManager Pro or would like to obtain a trial version, visit the web at [www.ProQuestMediaSolutions.com](http://www.ProQuestMediaSolutions.com) or call toll free at 1-877-417-4245.



## ***Tecumseh and Peerless Transmission, Transaxle and Gear Products***

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**PEERLESS<sup>®</sup>**  
**COMMERCIAL PRODUCTS**

**TECUMSEH<sup>®</sup>**  
**ENGINES & TRANSMISSIONS**

As mentioned in the 2004 update, our drive train products are separated into two divisions. Peerless is our commercial line while Tecumseh transmissions are used on residential lines. We have many new products that will be introduced over the coming months. The next few pages are some examples of the exciting new direction we are headed.

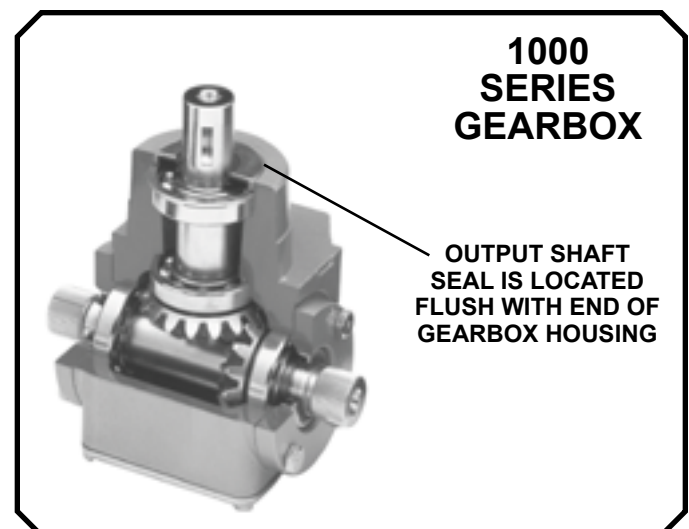
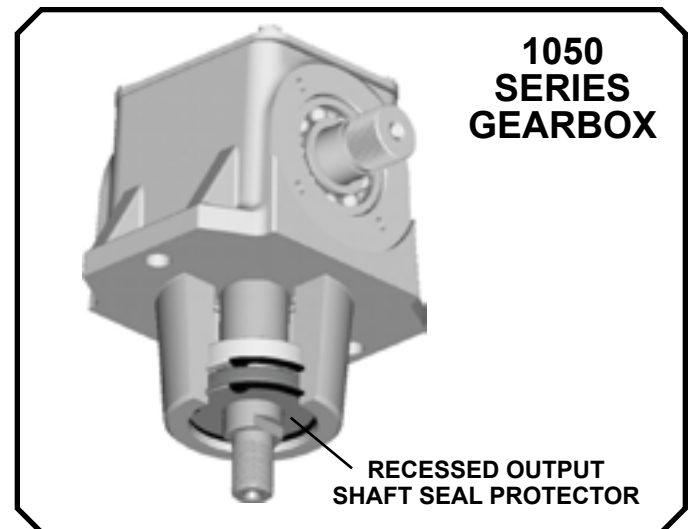
### ***A Look at the New Products Coming Soon !***

#### **1050 Series Right Angle & T-Drive**

Introducing the Peerless 1050 Series Heavy-Duty Right Angle & T-Drive Gearboxes. The 1050 Series gearbox design is basically the same as the 1000 Series gearbox with the exception of the housing material and the output side of the gearbox housing. The overall strength of the 1050 Series gearbox was increased dramatically over the 1000 Series gearbox by changing the material from aluminum to cast iron. The 1050 Series gearbox was developed for heavy-duty lawnmower blade drives, where the blade attaches directly to the output shaft of the gearbox.

The 1050 Series gearbox housing was improved in the area of the output shaft seal protector. The 1000 Series gearbox utilizes a metal plate, which attaches to the outside of the gearbox housing with three screws. The 1050 Series gearbox seal protector is recessed inside the housing barrel and secured with an internal retaining ring. The barrel of the gearbox housing was lengthened to allow for recessing the seal and seal protector. The new design output shaft seal protector provides the ultimate protection for the shaft seal.

Peerless 1050 Series gearboxes were designed to interchange with the 1000 Series Right Angle & T-Drives. The new gearbox has the same horsepower rating (10 H.P.) as the 1000 Series. When impact loads are too great for an aluminum gearbox, the Peerless heavy-duty cast iron 1050 Series gearbox is your best choice.



## ***Tecumseh and Peerless Transmission, Transaxle and Gear Products***

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### **Peerless 855 Series Utility Transaxle**

Peerless has designed and patented the 855 Series Utility Transaxle. Revolutionizing the utility industry, Peerless 855 Series transaxles enhance the utility product's performance by providing multiple ground speeds and reverse. The 855 Series transaxle is designed so horizontal engines can be bolted directly to the top of the transaxle by means of an adapter plate provided by the original equipment manufacturer (OEM). The transaxle housing is designed so vehicle attachments and the handle can be bolted directly to the transaxle housing without the need of a chassis.

A torque converter can be mounted between the engine and transmission inputs for ultimate performance. When the utility vehicle application does not require a torque converter, a conventional v-belt or centrifugal clutch and chain drive can be utilized in place of torque converter.

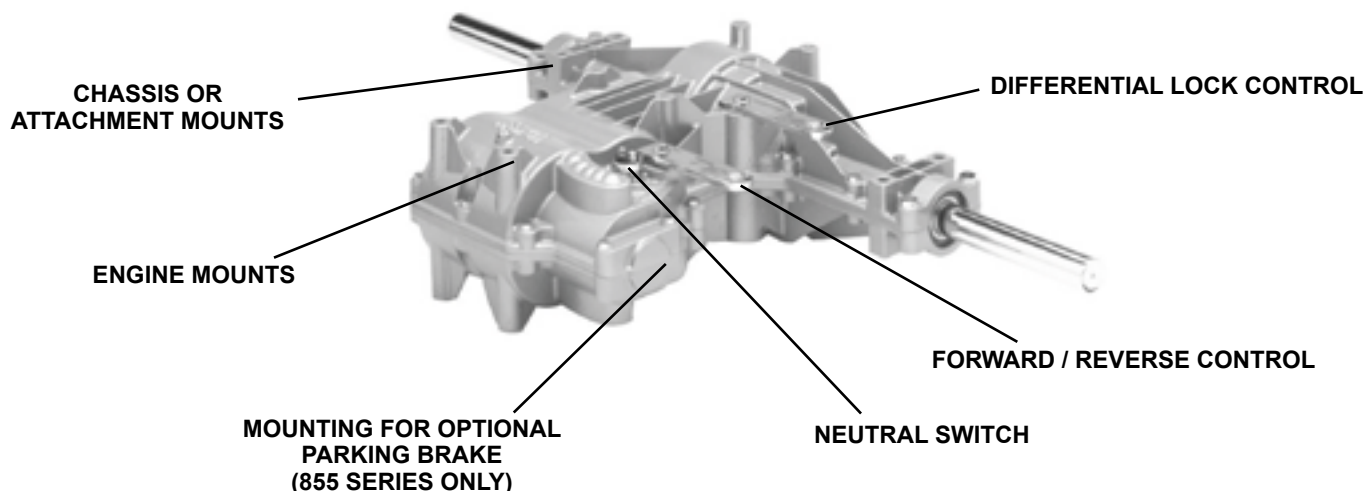
Other features of the 855 Series Utility Transaxle includes positive traction, differential with and without differential lock, parking brake (disc) and neutral switch.

The Peerless 855 Series Transaxle is ideal for lawn and turf applications such as commercial rotary brooms, vacuums, blowers, stump grinders, and lawn seeders. Other applications include construction and concrete equipment, and many other utility and maintenance equipment.

### **Peerless 860 Series Utility Vehicle Transaxle**

Peerless 855 and 860 transaxles have the same features except the 855 Series has a maximum ground speed of 6.0 mph, while the 860 Series Utility Vehicle Transaxle has a maximum ground speed of 25 mph. Both models can carry 600 pounds over the axle, tow 900 pounds and have an output torque capacity of 450 ft-lbs.

### **855 & 860 UTILITY & UTILITY VEHICLE TRANSAXLES**



## ***Tecumseh and Peerless Transmission, Transaxle and Gear Products***

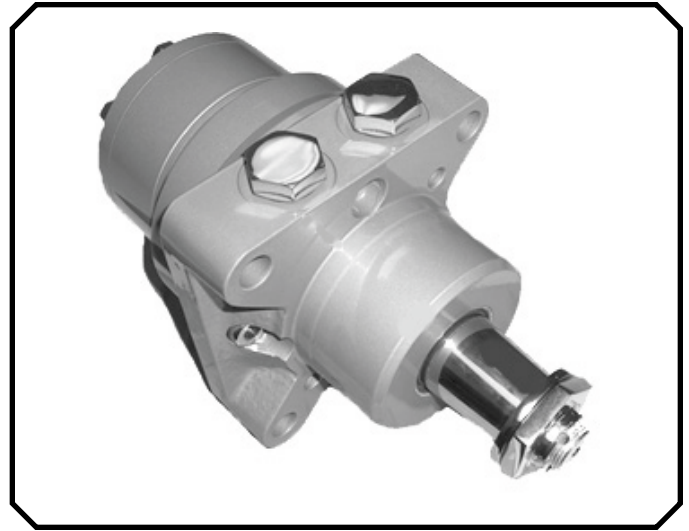
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### **Peerless K – Series Hydraulic Wheel Motors**

Peerless K-Series Geroler Motors provide the same advantages as our compact, low speed, high torque Peerless F-Series Gerotor type Orbit Motors. The Gerotor element makes this Orbit Motor ideal for applications requiring longer life while the motor is being operated for extended periods at low speeds.

Peerless K-Series hydraulic motors were engineered for extra-duty applications such as: walk-behind and ride-on mowers, sweepers, concrete saws, trenchers, and mini-skid steers.

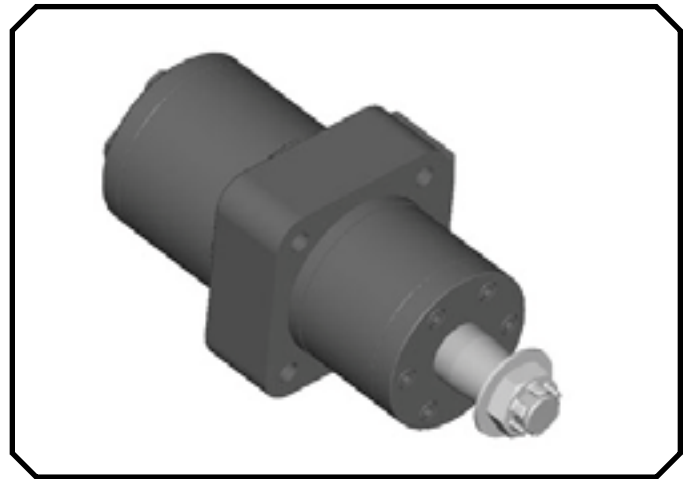
When the K-Series motors are combined with Peerless LDP Series pumps, they can be remotely located for optimum placement and performance. Peerless Hydraulic Motors and Pumps are suitable for a wide range of commercial applications requiring a compact package that is highly efficient. Peerless K-Series hydraulic motors are available with displacements from 3 to 24 cubic inch.



### **Peerless F – Series Hydraulic Wheel Motors**

For standard duty applications, Peerless F-Series gerotor type motors provide the same advantages as our K-Series at a more economical price. The F-Series hydraulic motors are adaptable to many low speed applications, and can eliminate expensive shafts, gears, chains, sprockets, belts, pulleys and other components.

The Peerless F-Series hydraulic motors can also be combined with the Peerless LDP series pumps for a more economical hydraulic drive. Peerless F-Series hydraulic motors are available with displacements from 3 to 24 cubic inches.



### **Peerless LDP-10 Series Hydrostatic Pump**

Peerless LDP-10 Series pumps can be used with either the Peerless F or K-Series Hydraulic Wheel Motors. When selecting a wheel motor, it is necessary to choose the wheel motor that has the proper displacement that match both the application and also the pump.





## ***Tecumseh and Peerless Transmission, Transaxle and Gear Products***

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### **Peerless – Axial Piston Hydrostatic Pumps & Motors**

Peerless fixed displacement hydraulic motors provide the ultimate in performance, durability, and ease of operation for commercial lawn equipment and other applications. When the FDM-718 Series motors are combined with Peerless VDP-718 axial piston pumps, they can be remotely located for optimum placement and performance. Peerless hydraulic motors are ultra-quiet.

The FDM-718 Series motor design includes fixed displacement axial pistons and swash plate, suitable for both open and closed circuits. Simple construction of the Peerless motor provides the ultimate in reliability and safety for a wide range of working conditions: they can withstand both low and high revolutions with constant torque.

Since the FDM-718 Series motors are compact, they can be fitted into very restricted areas which are difficult to achieve with traditional mechanical transmissions. For ease of hose routing, both side and rear ports are available.

#### ***Optional Features***

- **Displacement – 7, 9, 11, 13, 14, 17, 18 cc/rev**
- **Port Threads – UNF with or without o-ring**
- **Roller Bearing**
- **Output Shaft – straight, splined or thru shaft**

For optimum performance on four-wheel drive vehicles, several of the FDM-718 Series motors can be bolted directly to the 2600 Series Transaxle housing. When the FDM-718 Series motor is used with the 2600 Series Transaxle, the transaxle housing can be utilized as a hydraulic reservoir for the completed hydraulic system. When using the transaxle housing as a reservoir, an inlet filter must be used between the transaxle housing and the hydraulic pump.

For extra heavy-duty applications, consider using the Peerless FDM-1521 Hydraulic Motor and VDP-1521 Variable Displacement Pump.

The FDM-1521 Series Motors are available with 15, 17, 20 and 21 cc/rev.



**FDM-718 SERIES MOTOR**



**VDP-718 SERIES  
VARIABLE DISPLACEMENT PUMP**



**2600 SERIES TRANSAXLE**

## ***Tecumseh and Peerless Transmission, Transaxle and Gear Products***

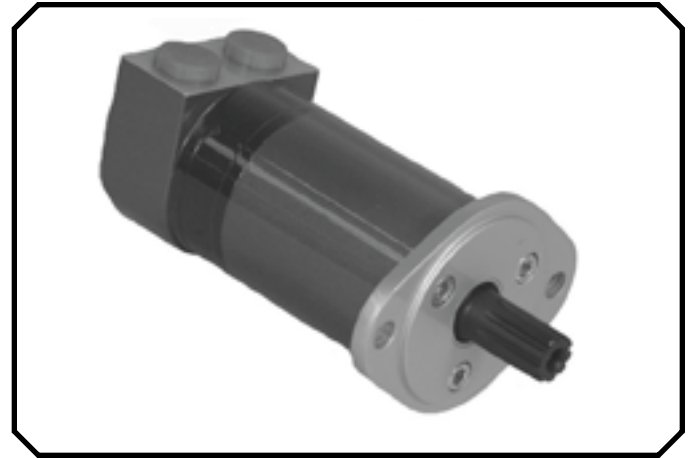
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### **Peerless Orbital Motors**

The Peerless D-Series motors are ideal for applications requiring a compact, low speed, high torque gerotor type Orbit Motor. Peerless D-Series Gerotor Motors provide the same quality and performance as the Peerless F and K – Series motors in a much smaller package. D-Series motors are available with displacements of 8, 12, 20, 32, 40 and 50 cc/rev.

#### ***D-Series Motor Options***

- **Flange mount**
- **Side or rear ports**
- **Shafts – straight and splined**

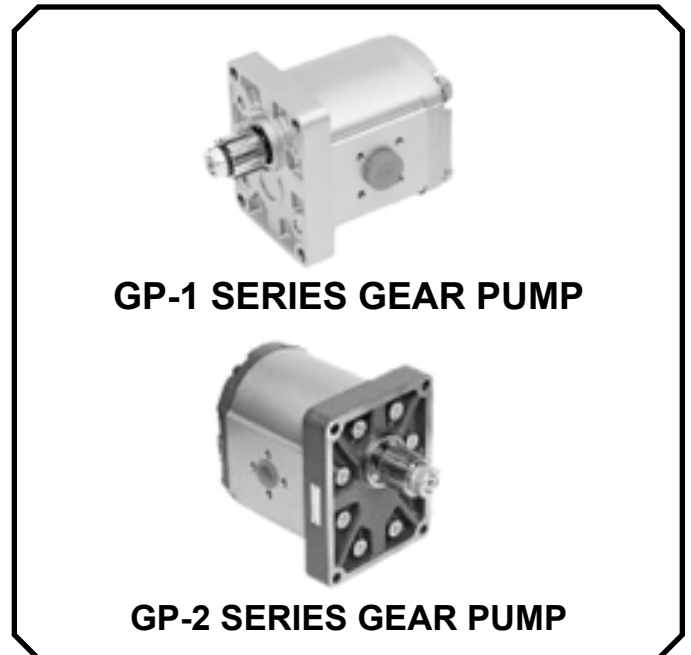


### **Peerless Gear Pumps**







The Peerless GP-1 and GP-2 Series Gear pumps can be sold separately or attached tandem to the rear of other Peerless Series hydraulic pumps. Peerless gear pumps are ideal for applications such as operating vehicle power steering, hydraulic cylinders, etc.

GP-1 Series Gear Pumps are available with displacements of 1, 2, 3, 4, 5 and 6 cc/rev.

GP-2 Series Gear Pumps are available with displacements of 4, 6, 8, 11, 14, 17 and 20 cc/rev.



## ***Peerless Commercial Electric Transmission Offerings***

	<p><b>PEERLESS MINI LINEAR ACTUATORS</b> <b>PLA-917 Series</b> Electric Linear Actuator (12 Volt D.C.) For Golf, Utility, Utility Vehicle &amp; Industrial Equipment Markets</p>
	<p><b>PEERLESS LINEAR ACTUATORS</b> <b>PLA-76 Series</b> Electric Linear Actuator (12 Volt D.C.) For Golf, Utility, Utility Vehicle &amp; Industrial Equipment Markets</p>
	<p><b>PEERLESS RIGHT ANGLE GEARMOTORS</b> <b>PGR-07 Series</b> Electric Gearmotors (12 Volt D.C.) For Utility Equipment Markets</p>
	<p><b>PEERLESS PARALLEL SHAFT GEARMOTORS</b> <b>PGP-52 Series</b> Electric Gearmotors (12 Volt D.C.) For Utility Equipment Markets</p>
	<p><b>PEERLESS PARALLEL SHAFT GEARMOTORS</b> <b>PGP-53 Series</b> Electric Gearmotors (12 Volt D.C.) For Utility Equipment Markets</p>
	<p><b>PEERLESS PARALLEL SHAFT GEARMOTORS</b> <b>PGP-62 Series</b> Electric Gearmotors (12 Volt D.C.) For Utility Equipment Markets</p>

Typical applications for linear actuators: raising mower decks and utility vehicle beds.  
Typical applications for gearmotors: rotating snow blower discharge chutes and seeder slingers.

# ***Tecumseh and Peerless Transmission, Transaxle and Gear Products***

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## **Addendum to VST to LTH Conversion Kit (799031)**

Kit 799031 was introduced last year as a means to retrofit riding lawnmowers equipped with the VST model of hydrostatic transaxle with the newer LTH model. There is one key difference between the lawnmower models, the position of the slot for the neutral disconnect rod. Due to these differences in the models, the instructions have been modified. The instructions stress using flat washers when attaching the disconnect bracket to the right torque strap. The purpose is to have the disconnect rod aligned in a relaxed position in the disconnect lever slot. There cannot be any side tension on the disconnect rod in the slot. If the steps are not followed the transmission could slip into the disconnect position and over time become damaged. Please follow and verify the proper installation of this kit to ensure customer satisfaction.

### **IMPORTANT NOTICE!**

#### **Installation and Instruction Addendum**

##### **NOTES**

*These instructions are an addendum and replace Steps 13 and 14 of the original Form No. 696522. Please provide this sheet for the owner and/or operator as a record of this conversion, for future parts reference.*

##### **CAUTION**

Carefully follow the procedures listed below **BEFORE** attempting to operate this unit. Failure to follow these instructions can cause internal damage to the hydrostatic drive, which could result in minor or moderate injury.

13. Install disconnect bracket to right side torque strap using new carriage bolt from kit. See Figure 15.

##### **NOTES**

*The use of 0, 1 or 2 flat washers may be required to properly align the disconnect linkage located in the disconnect lever slot. See Figure 16.*

*The disconnect linkage rod must be set so it resides relaxed in the disconnect lever slot. See Figure 16.*

*Side tension is NOT allowed between the disconnect linkage rod and the disconnect lever slot.*

14. Tighten and torque carriage bolt to 80-120 in/lbs (9-13.5Nm). See Figure 15.
- 14A. Locate disconnect rod under seat. See Figure 17.

- Measure the distance of the disconnect rod starting at the end of the linkage channel. A minimum measurement of 1/2" must be maintained for proper operation. See Figure 17.
- If the measurement is below required specification, remove the disconnect rod from disconnect lever and adjust by slightly bending rod.
- Re-install disconnect rod and check measurement.
- Proceed to step 15—Instructions Kit No. 799031.

The use of 0, 1 or 2 flat washers may be required.

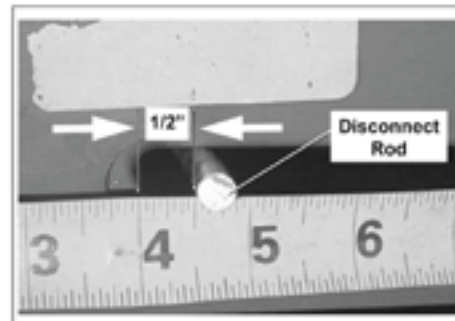


**Figure 15. Disconnect Bracket**



1. Disconnect Rod
2. Disconnect Lever

**Figure 16. Disconnect Rod & Lever Location**



**Figure 17. Disconnect Rod & Lever Location**

## ***Europa News***

### **New EcoTec Range**

The EcoTec engines which are designed to meet EU emission regulations are available in both vertical and horizontal crankshaft versions. Some of the features include contoured pistons, upgraded ring set and a new combustion chamber shape which improves combustion efficiency. These are complimented by a revised blower housing shape for increased cooling and a Series 11 carburetor.



The Vantage 35 EcoTec also features a new design Gerotor oil pump versus the standard piston style.



### **New Styling for the Centura**

As an addition to the popular Centura range the 156cc and 172cc versions are now available in Centura V style. This engine is offered in both standard and EcoTec versions.



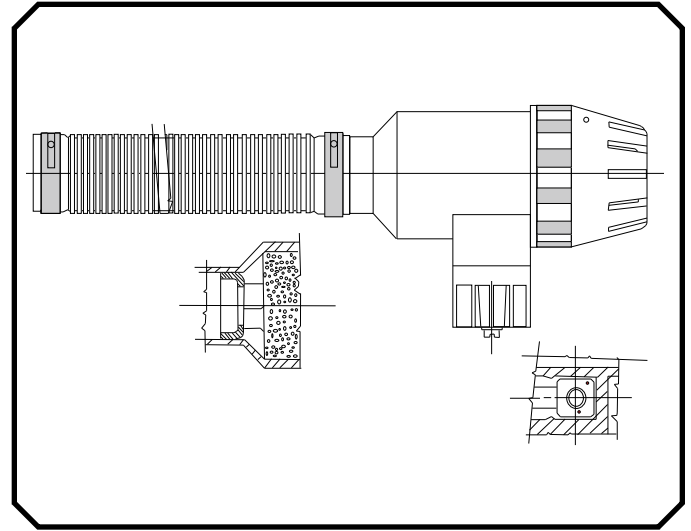


## Europa News

### New Snorkel Air Filter

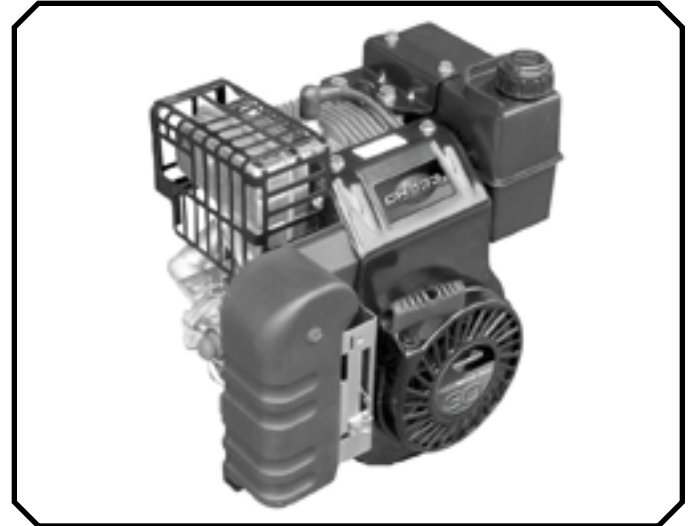
This snorkel, which is primarily intended for the extremely dusty conditions encountered in Australia and New Zealand, features a coarse foam filter mounted at the top of the tube in the snorkel head and a paper filter mounted at the bottom of the tube on the engine. This design provides a high level of security should the snorkel hose become damaged.

NOTE: This assembly cannot be retro-fitted, as it requires a change in carburetor.



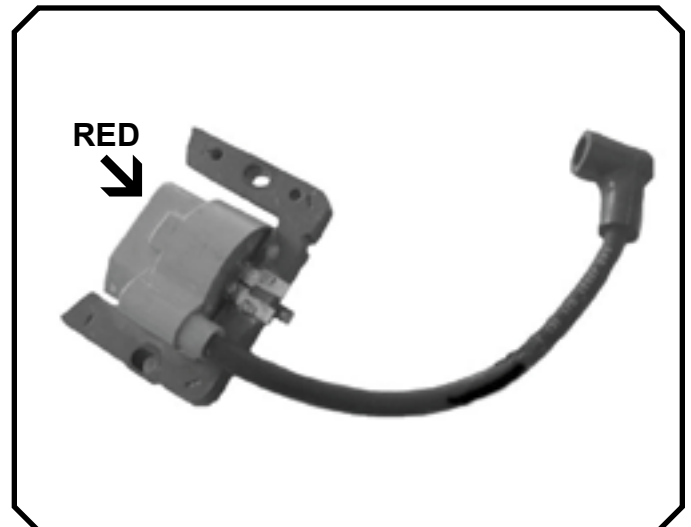
### New CH 133 Engine

This is a compact horizontal shaft engine which will be of 133cc capacity. It is configured for scarifiers and sprayers etc.



### Dual Sources for Ignition Modules

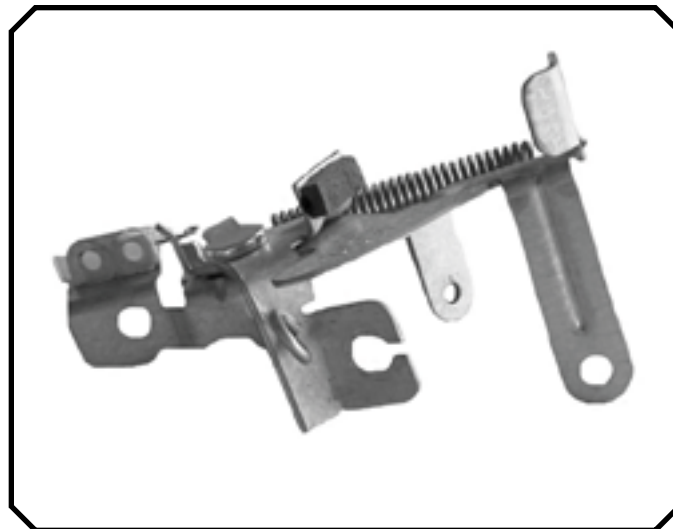
Engines manufactured in Torino, Italy now may have an ignition module from one of two sources. To help us distinguish between the two, one ignition module will have a red housing. There has been some concern in the field that these may not be original components. They are in fact factory ignition modules and both versions may be used interchangeably.



## Europa News

### Compact Brake Assist

There is a new compact version of the flywheel safety brake for rotary applications. This new brake will mount in the same holes as the original brake and the original OEM bowden cable may be used. Electric start models will still use the original brake because the need for the mounting of the interlock switch.



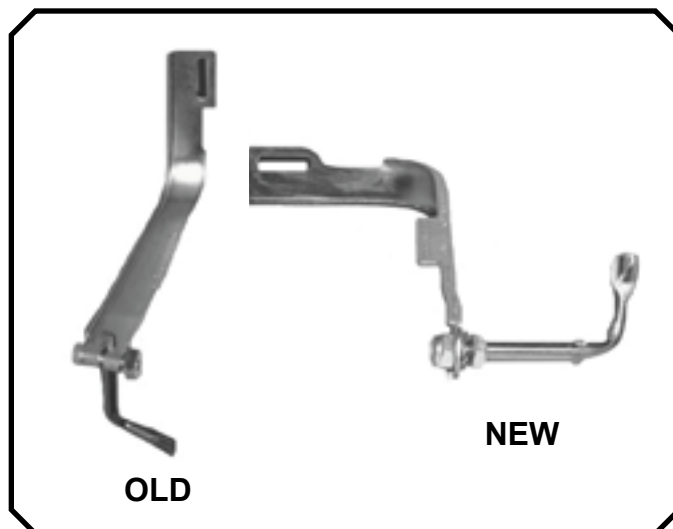
### Tellurium XL/C Engines

The Tellurium engine which is now available in 5, 6 and 7 H.P. outputs is an extended life unit in the overhead cam design. The camshaft is driven by a patented design utilizing a tooth belt. It was first introduced on generators and now will be seen on tiller applications. It includes a cast iron cylinder sleeve as well as ball bearings on the crankshaft and has a large paper air filter with a foam pre-cleaner for better filtration. The muffler is an Extra Quiet Muffler for better sound quality. Generator applications include an oil alert as standard. The special breather on this engine vents through the base of the air cleaner body and as the oil vapor condenses it is then re-circulated back to the crankcase.



### New Governor Lever for GeoTec Engines

The picture illustrates the change of the governor lever and arm used on our horizontal GeoTec range. You will note that we are now bolting the lever onto the arm rather than clamping. This will provide greater durability.



## 2005 Update Seminar Technician Test

1. The ring compressor Part Number 670391 is designed to be used only on the new TM engine.  
A. TRUE            B. FALSE
2. The "O" ring material on the main nozzle tube was changed to  
A. Allow for a color change.  
B. To comply with EPA standards  
C. Make it more resistant to alcohol blends of fuel.
3. How many float bowl kits are there for the Twin cylinder engine?  
A. 2  
B. 4  
C. 1
4. What increase in RPM is provided by the Turbo Boost system?  
A. 150 RPM  
B. 360 RPM  
C. 195 RPM
5. How many variations of the carburetor spacer block are there for the TM049XA engine?  
A. One  
B. Two  
C. Three
6. The Quiet Start system uses what type of flywheel gear?  
A. Steel  
B. Powdered metal  
C. Composite material
7. How many float bowl kits are available for Tecumseh carburetors?  
A. 8  
B. 5  
C. 7
8. What engine is the latest to have an MCR repair kit?  
A. OHH - OV195  
B. TVT, OV691  
C. OHV13-18, OV490
9. What is the minimum RPM requirement needed to produce 10 amp D.C. out the new 10 amp alternator?  
A. 3600 RPM  
B. 3200 RPM  
C. 3400 RPM
10. What is the torque on the jam nut used on the 730636A rocker arm stud kit?  
A. 190 inch lbs.  
B. 150 inch lbs.  
C. 210 inch lbs.
11. What type of coating is used on all small frame pistons beginning this year?  
A. "T" - coat  
B. Moly - coat  
C. Chrome - coat
12. What part of the OH195 carburetor has been modified to reduce run issues on equipment that experience high load, high vibration conditions?  
A. Atmospheric vent hole  
B. Emulsion tube  
C. Main nozzle air bleed
13. What is the maximum tire pressure measured with the new 670392 tire gauge?  
A. 20 PSI  
B. 40 PSI  
C. 120 PSI
14. What company will be the exclusive parts catalog supplier for Tecumseh?  
A. Data Pro  
B. Pro Quest  
C. Data Quest
15. What charging system is the newest wire harness (611300) used on?  
A. 10 amp  
B. 18 watt  
C. 3/5 split
16. When diagnosing hard starting problems the MCR (Mechanical Compression Release) is one area that should be considered?  
A. TRUE            B. FALSE
17. At what temperature should the engine oil be changed to a lighter weight oil to accommodate easier starting?  
A. 32°F (0°C) to 40°F (4.4°C)  
B. 20°F (-6.6°C) to 32°F (0°C)  
C. It is not necessary to change the oil.
18. What was the change that occurred on the LV195EA head?  
A. The head bolt bosses were beefed up.  
B. The bolt pattern was changed.  
C. The cooling fins were changed.
19. The oil pump was changed on the OV358 (OHV13) to do what?  
A. To increase pressure for an oil filter system.  
B. Add an oil pump to the OV358 (OHV13).  
C. Standardize components.
20. The name of the lawn mower blade securing system offered by Tecumseh this year is?  
A. Blade secure  
B. Blade holder plus  
C. Blade Buster

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## ***2005 Update Seminar Technician Test***

- ////////////////////////////////////
- 40. Not all oil filters have a by-pass valve, what purpose does it serve?
    - A. Allows oil to pass through when filter is restricted
    - B. Allows oil to pass through in extremely cold weather
    - C. All the above.
  - 41. What engines does the revised 694782 Technician's Handbook cover?
    - A. HSK840-870
    - B. TC/TM
    - C. HSK600
  - 42. What is the shape and color of the 632433A primer bulb?
    - A. Hour glass / Red
    - B. Hour glass / Black
    - C. Derby hat / Red
  - 43. Linear actuators use what as a power source?
    - A. 120 volt A.C.
    - B. 12 volt D.C.
    - C. Hydrostatic Fluid
  - 44. What is the current Model designation for the OHSK75?
    - A. OH195EP
    - B. OH195SA
    - C. OH195SP
  - 45. What is the Model code for 50 state compliant engines?
    - A. E
    - B. X
    - C. S
  - 46. What color wire designates A.C. leads?
    - A. Green
    - B. Yellow
    - C. Red
  - 47. What type of oil pump does the Vantage 35 EcoTec engine use?
    - A. Barrel
    - B. Gerotor
    - C. It has no pump
  - 48. How many muffler kits are available for the Twin cylinder engine through Tecumseh?
    - A. 8
    - B. 6
    - C. 4
  - 49. What does SST stand for?
    - A. Standard Service Training
    - B. Solid State Technology
    - C. Sure Start Technology
  - 50. What are the Peerless K and F Series models?
    - A. Wheel motors
    - B. Linear Actuators
    - C. Gear Pumps



Notes

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# Reference

## New Model Numbering System for Tecumseh's Full Engine Line

CODE
<b>1st Space - Valve Orientation</b>
T = Two Cycle
O = Overhead Valve
L = L-Head
<b>2nd Space - Crank Orientation</b>
V = Vertical
H = Horizontal
M = Multi-position
<b>3rd, 4th and 5th Space - Displacement in cc</b>
<b>6th Space - Emissions Class</b>
E = 50 State/Global Emissions Compliant
X = Not for sale in California, except exempt applications
S = Snow Emission Compliant
<b>7th Space - Engine Specifics</b>
A = Standard
P = Powered Up

### Model Conversion Chart

#### 4-Cycle

<b>LEV90</b> - LV148EA	<b>OHH60</b> - OH195EA
<b>LEV120</b> - LV195EA	<b>OHH65</b> - OH195EP
<b>HSSK50</b> - LH195SA	<b>OHSK70</b> - OH195SA
<b>HSSK55</b> - LH195SP	<b>OHSK75</b> - OH195SP
<b>VSK90</b> - LV148SA	<b>HMSK90</b> - LH318SA
<b>OHV135</b> - OV358EA	<b>HMSK110</b> - LH358SA
<b>OHV180</b> - OV490EA	<b>OHSK110</b> - OH318SA
<b>TVT691</b> - OV691EA	<b>OHSK130</b> - OH358SA
<b>VTX691</b> - OV691EP	<b>OHM110</b> - OH318EA

#### 2-Cycle

<b>TC300</b> - TM049XA (new design)
<b>HSK870</b> - TH139SA
<b>HSK600</b> - TH098SA
<b>AV520</b> - TV085XA



## Reference

### Wire Harness Connectors



611296

3/5 SPLIT



611300

BASIC 3/5 SPLIT



611297

16 AMP



37642

(2) 2 PIN INTO 6 PIN



611294

BASIC 6 PIN



611293

BASIC 4 PIN



## Reference

STANDARD WIRING COLOR CODES		
Code		Product
Yellow	-	Alternator A.C. Leads
Red	-	Alternator D.C. + Leads
Brown	-	Alternator D.C. – Leads
Black	-	Alternator Ground Leads, Battery Ground Leads
Orange	-	12 Volt Starter B+ Leads
Dark Green	-	Ignition Shut-Off Leads



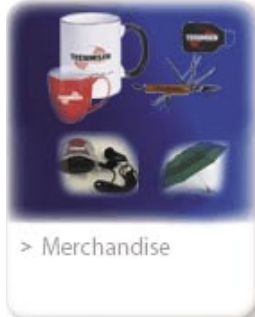
## Reference

### FLOAT BOWL KITS

Model	Bowl Kit	Nozzle Color	Jet Color
VLV (non emissions)	730235A	Red	Red
VLV (emissions)	730637	Yellow	Yellow
VLV (non emissions-Victa)	730641	Green	Red
OHV110-130/OV358EA	730638	Black	Pink
OHV135-175/OV490EA	730639	Blue	Brown
OHM/OH318EA	730649	Black	Black
TVT/OV691EA	730649	Black	Black
VTX/OV691EP	640335	Black	White



***Dealers! Anything purchased from TecumsehStore.com totaling \$100 or more automatically qualifies for up to 50% Co-op. Call your Central Distributor for details and forms.***



> Merchandise



Candy Jar  
Great counter giveaway !



Roll-up Fleece Blanket



Umbrella



Garritty High Intensity  
Pen Light with  
Pocket Clip and Batteries



Snow King Stocking Cap  
Heavy Duty Ice Scraper



Pedometer with Am / Fm Radio

**[www.TecumsehStore.com](http://www.TecumsehStore.com)**

or call the store at 1-800-770-4030



**[www.mymowerparts.com](http://www.mymowerparts.com)**

For Discount Tecumseh Engine Parts Call 606-678-9623 or 606-561-4983



**ENGINES & TRANSMISSIONS**

**Tecumseh Power Company**

900 North Street  
Grafton, WI 53024  
Phone: 262-377-2700  
Fax: 262-377-4485

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Strada delle Cacce, 99  
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