TRADITION. INNOVATION. SUPPORT.

SERVICE UPDATE SEMINAR 2012-2013

KOHLER. Engines

Command Series

Courage Series

New Products

Miscellaneous

Technician's Service Test

Command Twin

DSAI Issues

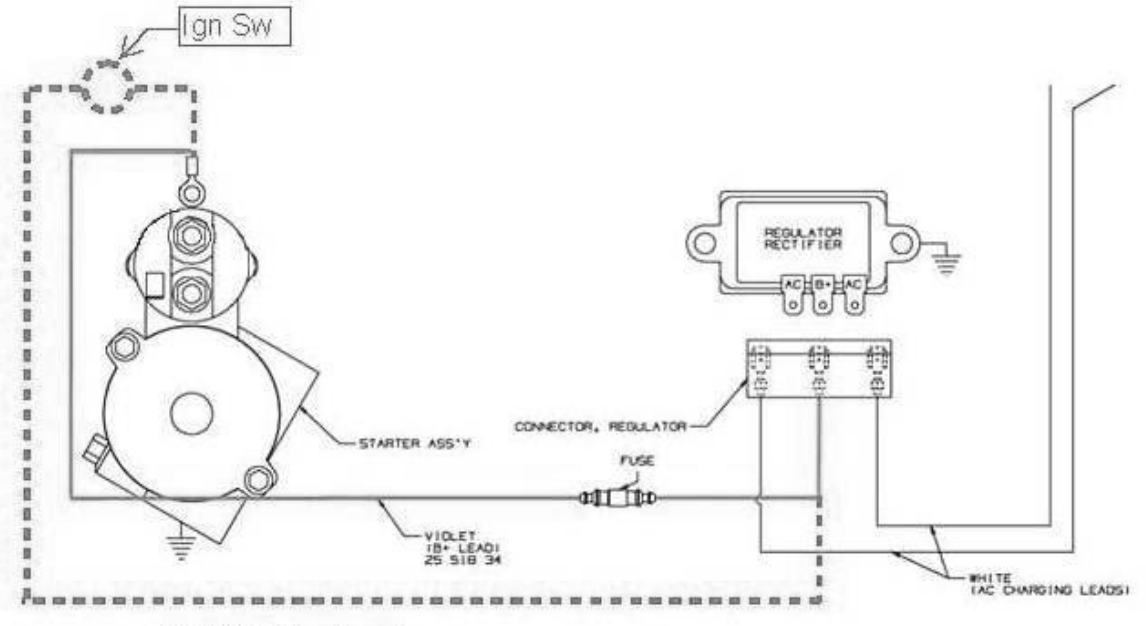
Failures and repeat failures of the Command Twin DSAI ignition systems seem to be tapering off but many technicians are still not aware of what to look for to properly repair failed units.

This involves mainly engines built since 2008 and any older Command Twins that have been updated with the new DSAI ignition systems (i.e. the 24 755 172-S Kit). The issue also seems to be much more prevalent with certain applications. We have determined that the failure is likely due to stray voltage from the engine charging system coming through the key switch. Testing has found the potential for a millisecond burst of current to be shot down the ground path when the key is switched from one position to the other. The issue is how the current is managed for this instance while the key switch is being moved.

The repeat failures mainly happen on engines with a 15 amp charging system, that route the purple charging wire (B+ of the voltage regulator) through the key switch and then to the battery positive post. The current from this charging circuit is being identified as the culprit for the spike.

The solution simply involves rerouting the purple charging lead directly to the large positive post on the starting solenoid (excluding the key switch) using the 24 176 13-S Fuse Lead Kit. This kit is now included with the 24 755 172-S DSAI Conversion Kit.

(Reference the production wiring schematic below)



No repeat failures have been reported after this change has been implemented. Keep in mind such things as poor connections at any point in the wiring system can also cause electrical arcing and current spikes. We recommend that you remove and inspect the regulator rectifier for pitting marks or arcing from a poor ground strap connection. Any type of arcing (ground contacts, key switch connections etc.) could create a potential spike that might be enough to affect the DSAI modules even on systems where the key switch routing is not used or has already been addressed (i.e. 25-30 amp charging systems).

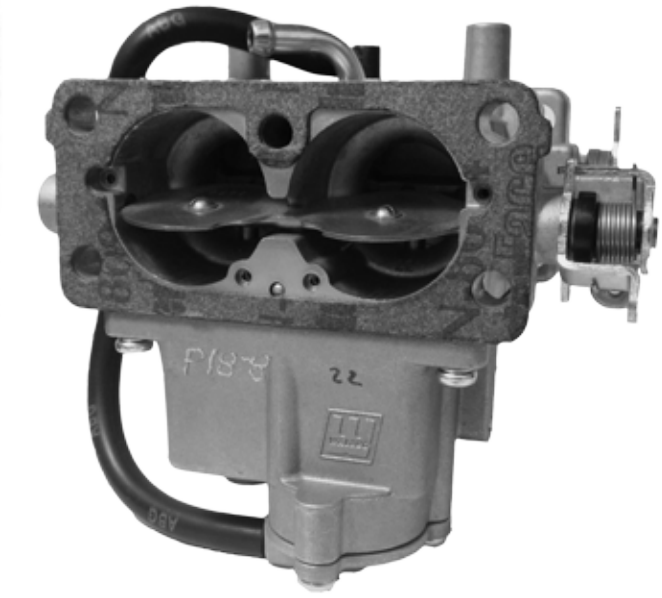
Exhaust Stud Installation

All Command Twins have an “interference thread” on one side of the exhaust stud. This larger thread is designed to be inserted into the head and stay in place allowing for easy assembly and removal of the exhaust system. A “Dot” is used on one end of the stud to indicate the small thread side. When installed into the cylinder head the “Dot” should be visible.

Two Barrel Carburetors on Command Twins

In an effort to minimize emissions, Performance Engineering has developed a new two barrel carburetor to replace the single barrels of the past on Command Twin engines. The advantages of one barrel per cylinder will allow precise tuning without the problems of fuel distribution in the intake manifold flowing from one cylinder to the other. The old school method of using a single carburetor to feed both cylinders can be tuned for performance but emissions will suffer as one cylinder will always be a bit rich and the other a bit lean. A change in speed and load can reverse the rich side to lean and lean side to rich.

The conversion to two barrel will begin with 23 hp to 30 hp horizontals using the engine mounted Heavy Duty Air Cleaner (HDAC). Other twins will follow as development progresses.



Features Include:

SRC (Self Relieving Choke)

Nickel Plated Fuel Inlet Seat

Fuel Inlet Needle with Dampening Spring

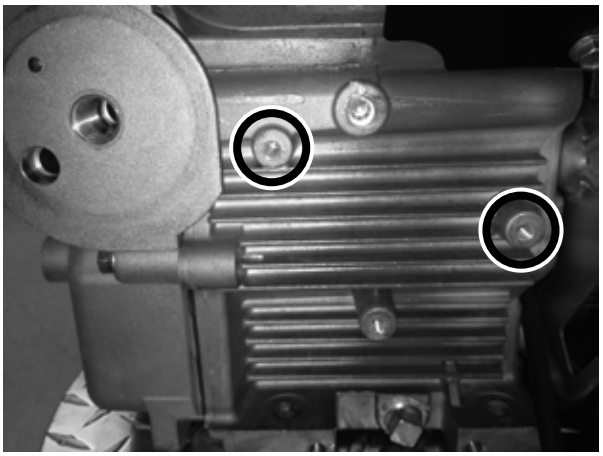
Fuel Shut-Down Solenoid (Same as Courage Single)

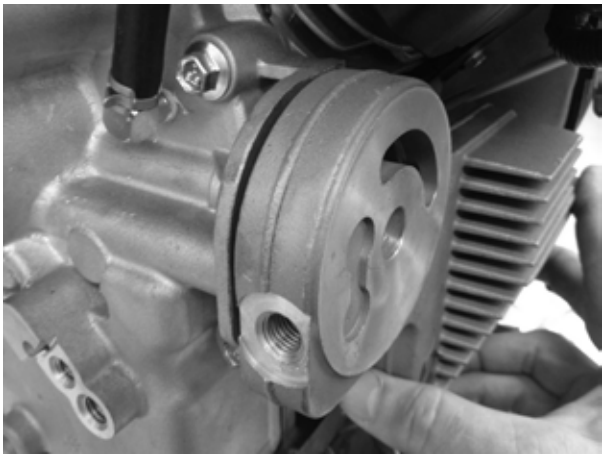
Vacuum Operated Accelerator Pump (Standard)

Internal Bowl Vent

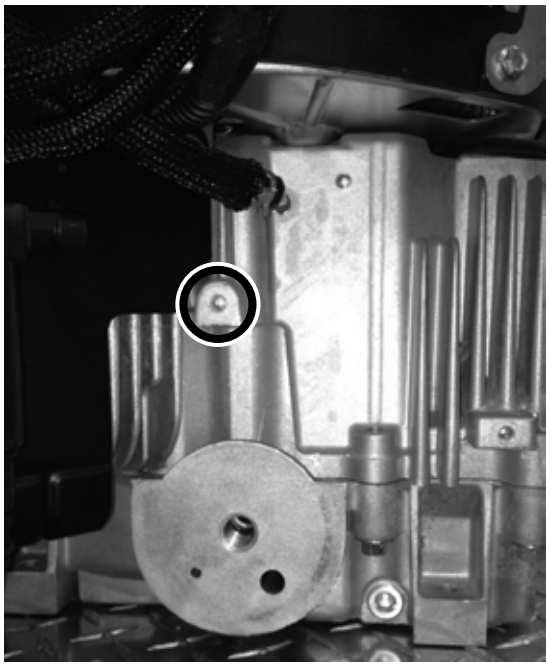
Oil Cooler Interference

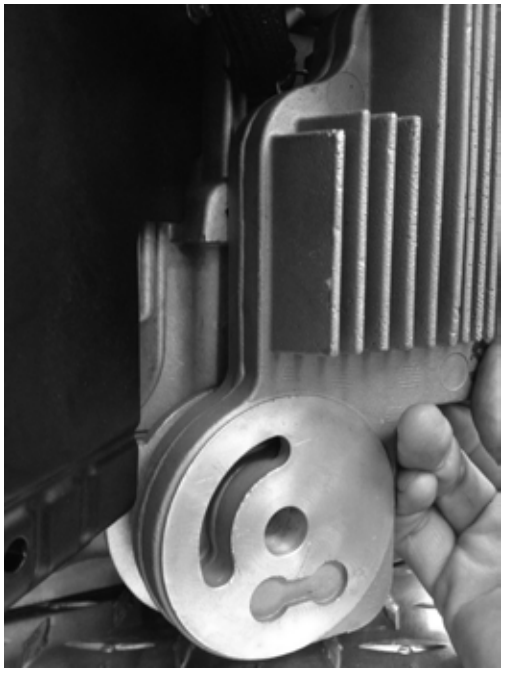
In an effort to reduce the number of parts in the system you will find new short blocks that have mounting bosses for EFI fuel pump modules. In most cases this is not an issue and just an unused casting on the block. In rare cases when used with a cast aluminum oil cooler there is interference and a small amount of trimming is needed to mount the oil cooler. In all cases, trim the mounting bosses and not the oil cooler.





The CH engines interfere at the top two bosses.

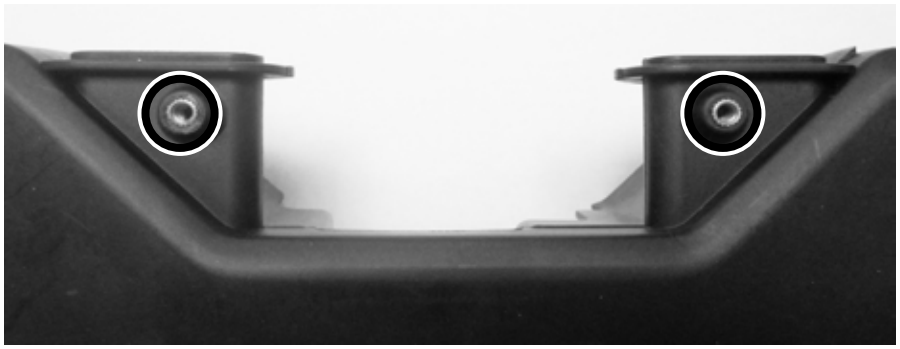




The CV engines only interfere at the boss on the left.

Blower Housing Inserts

There has been an upgrade to the blower housings for Command twin cylinder engines. The two attaching points on the blower housing for the air filter assembly have received M5 metal nut inserts. The base of the mounting boss has an increased radius to improve strength. This was done to prevent the air filter assembly mounting bolts from pulling out or breaking off of the blower housing on some applications.

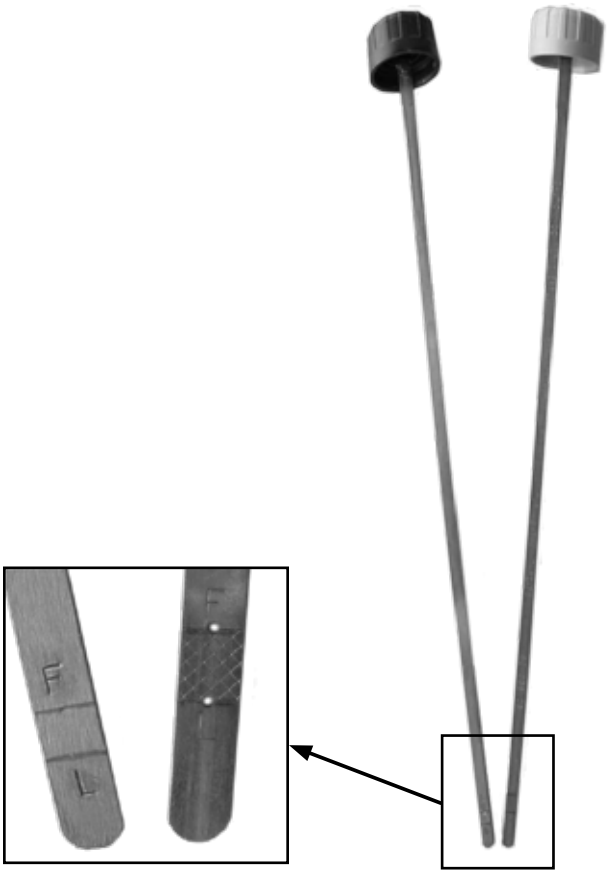


CV Dipstick Improvement

A new dipstick has been developed for the CV940-1000 to help prevent overfilling of oil in the crankcase and smoking. In most cases this occurred when engine mounted on the application was not level.

The new dipstick has slightly relocated “F” and “L” markings for indicating the correct oil volume in these situations. The cap on these special dipsticks are black in color to distinguish them from the regular dipstick and used as standard production on specific OEM engine specs where oil level and engine mounting has been more sensitive.

If you find a similar issue, you can order through your normal source of supply.



Secondary Air Injection

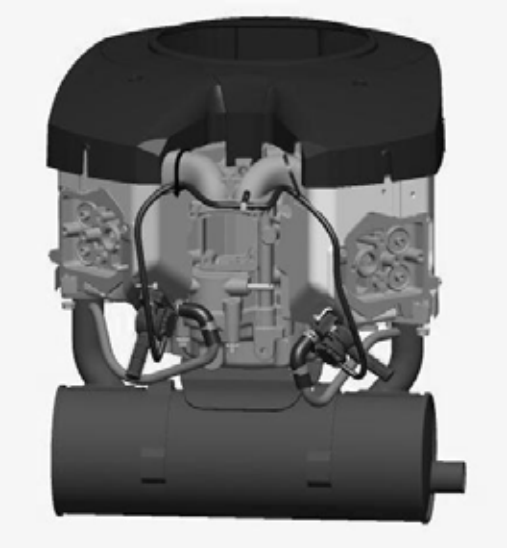
Kohler is releasing a series of 999cc engine models that are compliant with CARB (California Air Resources Board) regulations, thus making them compliant in all 50 states.

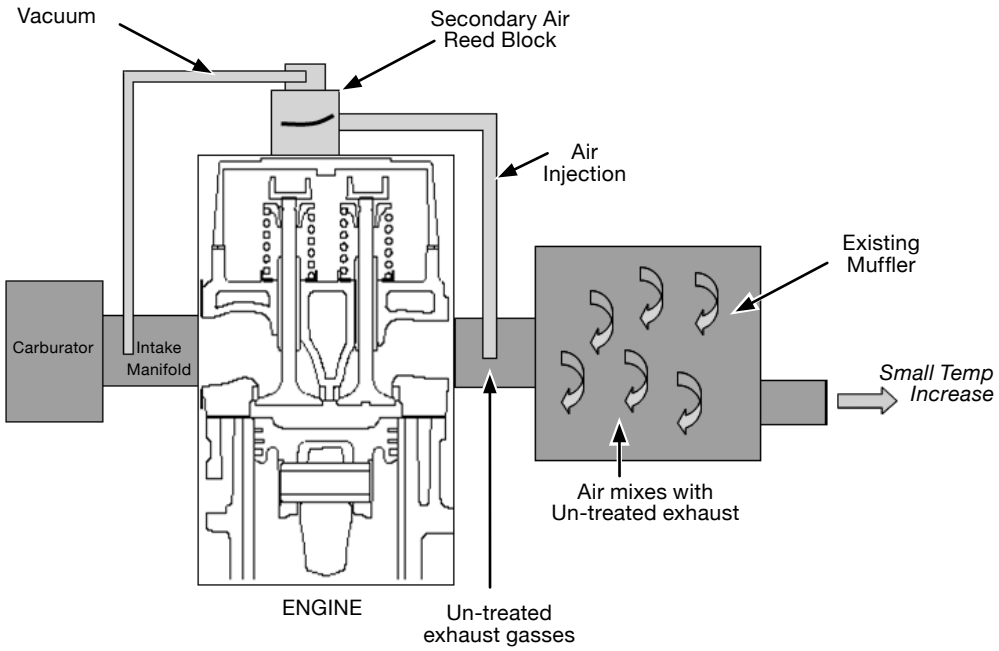
You will find Secondary Air Injection (SAI) systems for select 999cc engine models that will ensure CARB emissions compliance. This system injects air into the exhaust manifold to oxidize hydrocarbons and carbon monoxide using less heat than a catalyst.

The SAI calibration is very specific to a given engine configuration including PTO orientation (Horizontal or Vertical), air cleaner type Heavy Duty Air Cleaner (HDAC) or Low Profile Air Cleaner (LPAC), and muffler (Kohler or customer supplied). Kohler will be offering three 999cc models that are CARB and 50-state compliant.

Those models are:

- Horizontal 38 HP with Kohler HDAC & Kohler Muffler (Marketing Basic)
- Horizontal 38 HP with Kohler LPAC & Kohler Muffler (Marketing Basic)
- Vertical 38 HP with Kohler HDAC & Kohler Muffler (Marketing Basic)





How it Works

When the exhaust valve opens, spent exhaust gasses pass into the manifold at high velocity. When the exhaust valve closes, fresh air enters the exhaust manifold from a tube near the cylinder head mounting flange. The air comes from a control valve mounted near the exhaust system. The control valve is allowed to open when intake manifold vacuum is low and close when vacuum is high.

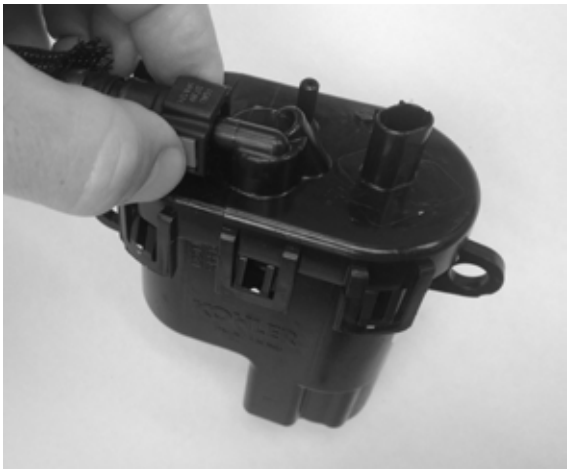
EFI

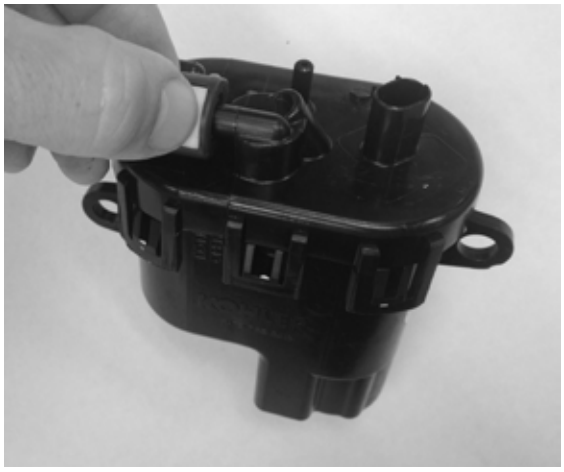
Fuel Line Connector Change

A change has been made to the high pressure fuel line connector on the Commercial EFI. The old connector uses two red opposing buttons and the new one has a single white button. This seems to have caused some confusion in the field as the new style seems to resemble an automotive connector that operates differently

Old

New





Both the red and white button connectors operate by pressing to unhook from the barbed male fitting on the fuel pump module.

A similar automotive connector uses a single white button that is pulled out to release. If this is done on the Kohler connector, the button is broken and cannot be repaired. New connectors are not available from Kohler and a complete fuel hose assembly kit must be ordered and installed.

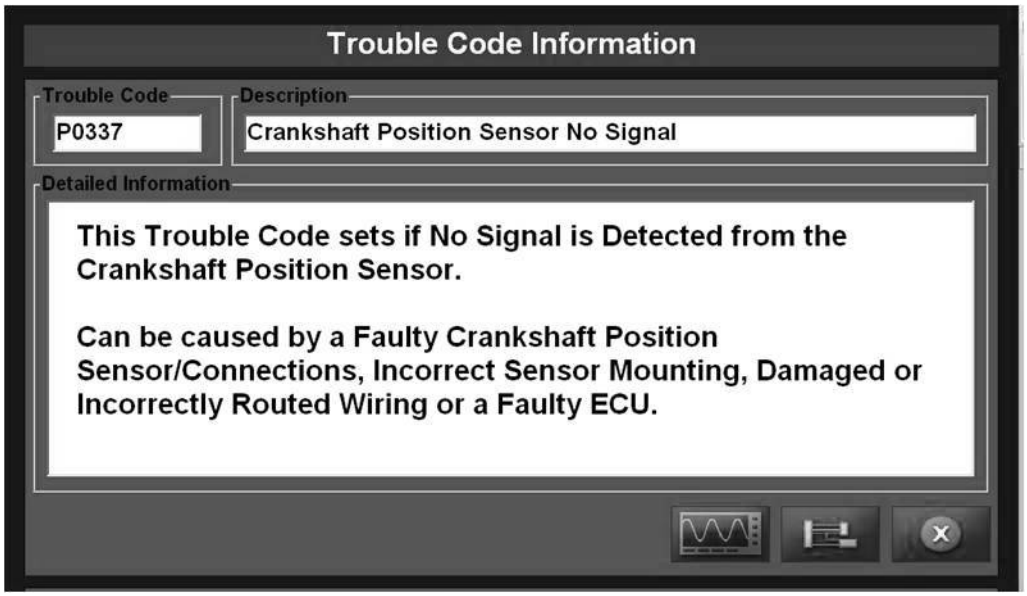
Code P0337 Crankshaft Position Sensor

Sporadic reports of code P0337 have been reported to the Kohler Service Department. In most cases this is a false code and considered more of an annoyance than something to be concerned about. If the engine runs, the code can be ignored and cleared.

The purpose of P0337 is to indicate a no signal condition from the crankshaft position sensor to the ECU. If this is truly the case, the engine will not start because the ECU is not aware the engine is rotating and cannot find TDC or engine speed.

How the code is activated:
When the key is turned “ON” the ECU captures and records battery voltage. As the starter is engaged the voltage will drop 2 volts or more. When the ECU picks up this voltage drop it looks for a signal from the speed sensor. If no signal is found the code is activated.

A false code is triggered by a voltage drop with the key “ON” and engine “OFF”. It may be caused by a poor or disturbed battery connection, battery charger connected or disconnected or anything that will interrupt the voltage signal to the ECU like a power interruption or heavy battery load from the vehicle.



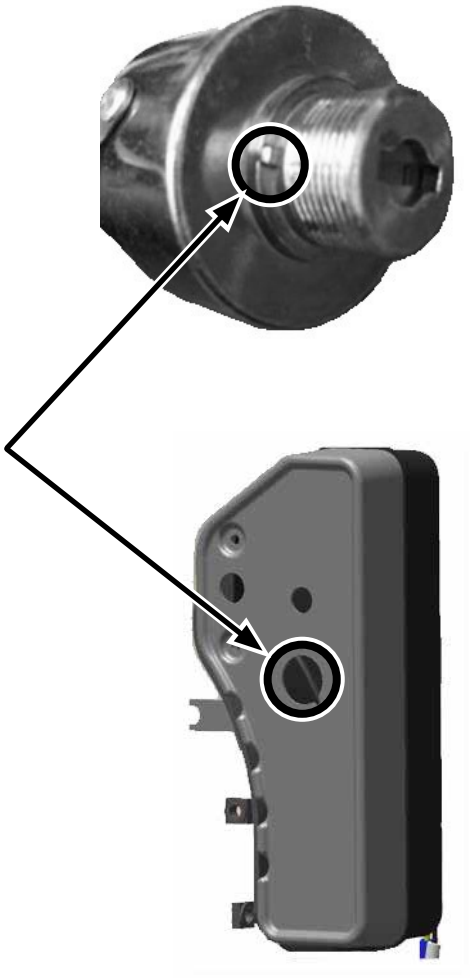
Command Single

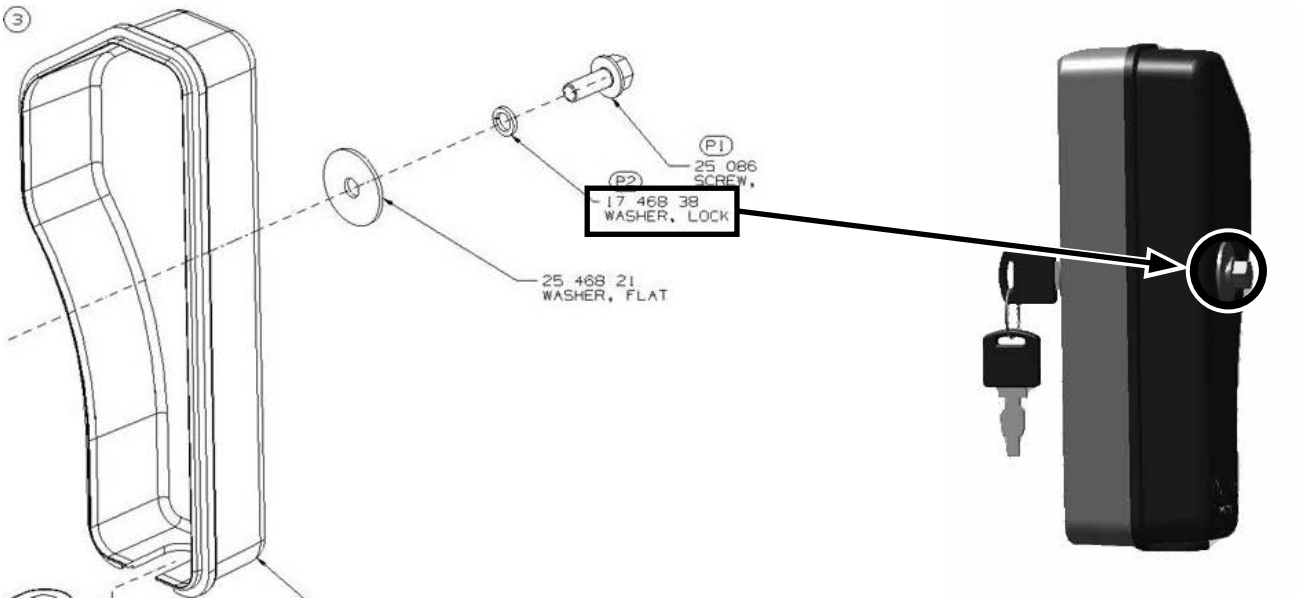
Improved Key Box

Reported issues of key boxes coming apart has prompted a new look at how this box is assembled.

First, a tolerance change was made to the locking tab where the switch protrudes through the front cover. A nut secures the front cover to the switch. This will make a positive lock and keep the switch from rotating during normal use.

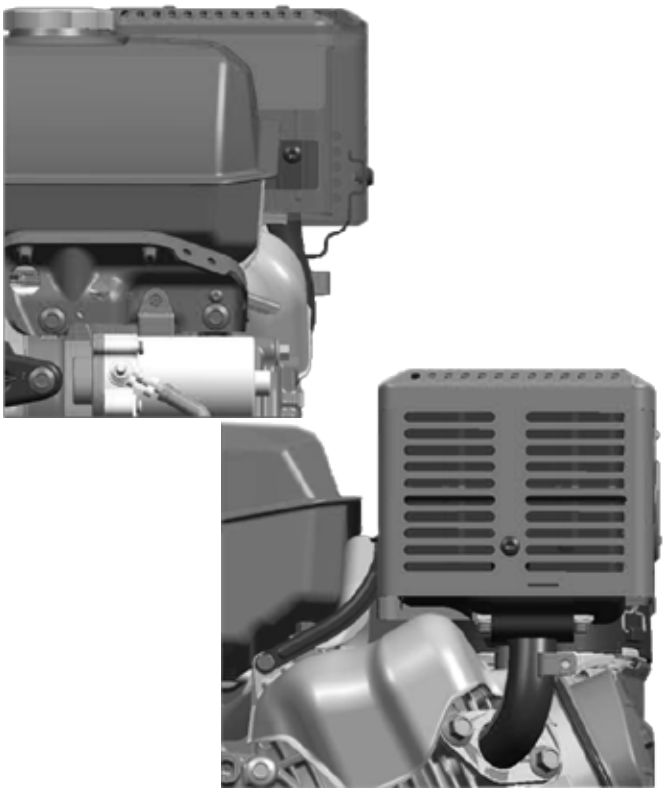
Second, a screw through the back cover into the switch is used to hold the assembly together. Unfortunately, switch rotation and vibration would cause the screw to become loose. A simple lock washer is now used to secure the box and keep everything in its place.

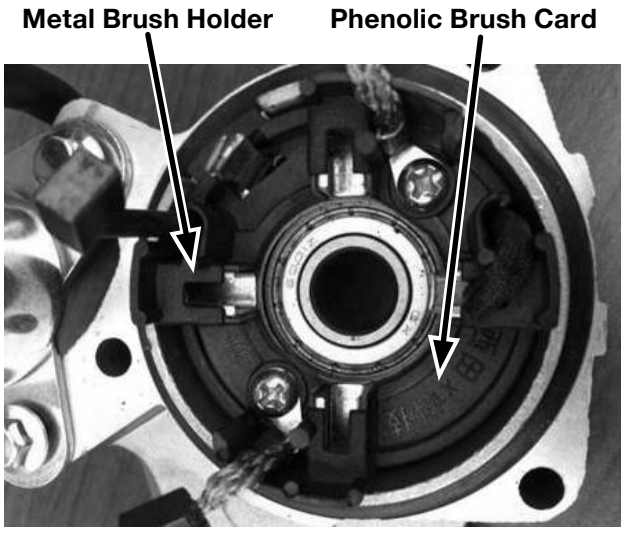




New CH440 Heavy-Duty Muffler

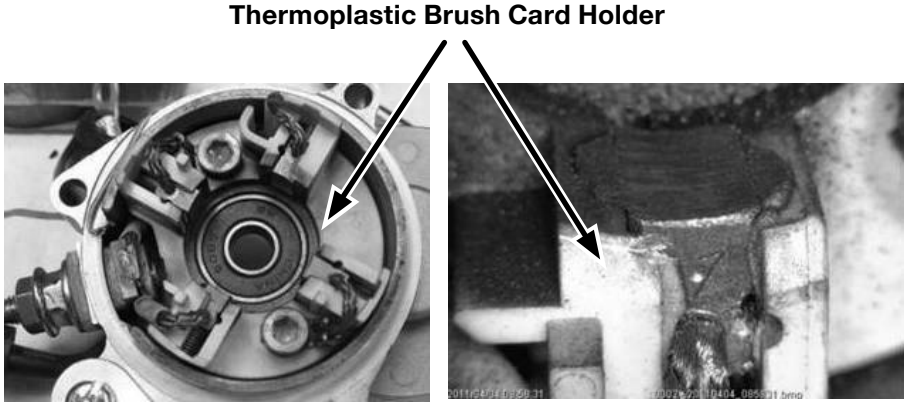
The muffler of the CH440 has been improved for use with compressor applications. Engine vibration plus compressor vibration can create extreme demands on engine components. The new Heavy-Duty muffler 17 068 80-S is a one piece design with a slightly wider body thickness of 0.87 in. (22.1 mm) on the PTO side and uses two support brackets. The kit includes heat shield, gasket and all parts necessary to convert from the standard 17 068 70-S muffler.





New CH440 Starter

Larger engines power larger equipment. In some cases that equipment has an increased parasitic load. To overcome that increased load during the start cycle of the CH440, a new starter 17 098 11-S has been developed. This new design uses metal brush holders and a phenolic brush card to replace the old thermoplastic style. The new design is capable of accepting loads up to 180 amps with 10 second cranking cycles. This is more than twice the load amperage and three times the cranking cycles of the previous design.



CH270 – 395 Gear Reductions of 6:1 with Wet Clutch on 2:1

Two new options are available for gear reductions on both the CH270 and CH395 engines for 2013. Both engine models offer a 6:1 direct drive and a 2:1 wet clutch drive.

Note: Engine Length and Height have not changed but Width will increase significantly. Crankshaft rotation has not changed direction. See sales brochure for specific engine dimensions.

CH270 2:1 with Wet Clutch
The 2:1 gearbox is separate from the engine crankcase and has its own dipstick and oil level. Use proper engine oil for temperature expected. The engagement and disengagement speed of the clutch is 1800 +/- 200 rpm.

CH270 6:1
The 6:1 gearbox is separate from the engine crankcase and has its own oil level. Use proper engine oil for temperature expected.

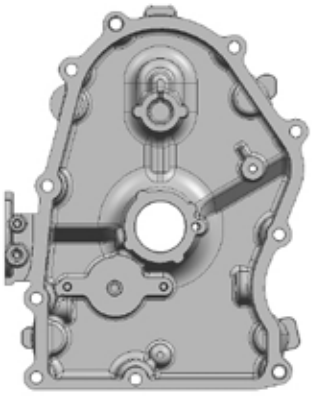
CH395 6:1
The 6:1 gearbox is part of the engine crankcase and is lubricated with the same oil.

Courage Twin

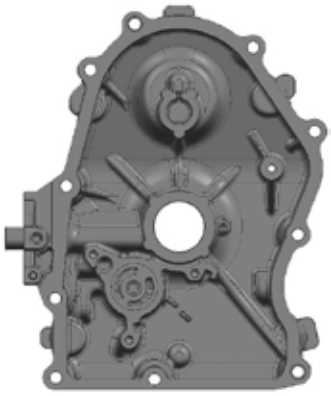
New Rigid Oil Pan

Improved structural integrity is just one of the features found in the new oil pan. Added gussets around the main bearing, governor mounting boss and throughout the interior of the pan complete this solid design. The benefits found are reduced bearing deflection for less stress between the crank and pan bearing.

Current



New



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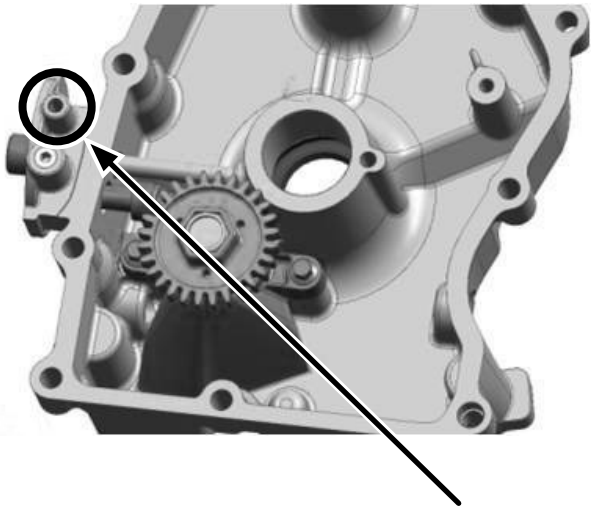
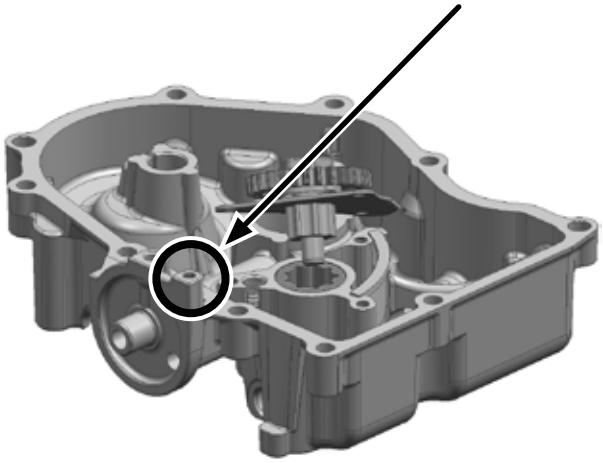


Ground Location



New

Aluminum Cavity Oil Pump

The new oil pan reduces the number of parts assembled inside the engine including the plastic bodied oil pump. The casting design of this pan includes a cavity placement for the Gerotor pump as well as the ball and spring type pressure relief valve. The pump is complete when the screen is installed and the drive gear and plate assembly is mounted with three screws. By design, this system produces 30% greater flow than the previous pump.

Note: The ground boss location has been moved to the opposite side of the oil sentry for easier access by the OEM's.

Longer PTO Bearing

With the new designs incorporated into the pan, Kohler Performance Engineering was able to lengthen the PTO for increased surface area between the crankshaft and the pan bearing. The added area to both has significantly increased the side load capability.

The new crankshaft is reverse compatible to work in previous engines. The extended bearing of new oil pan will not work on previous engines without upgrading the crankshaft to the new design.

Current

New

12 Amp Charging System

The standard charging system on the SV710-730 and SV810-830 (20-25 hp) will change to 12 amps for 2013. The only part that changes will be the stator with reduced windings. The standard 15 amp rectifier/regulator will still be used.

Service replacement for the 12 amp stator will be the standard 15 amp.

A 15 amp system is still optional for the SV710-730 and SV810-830 but the SV735-740 and SV830 (26-27 hp) will continue to use the standard 15 amp system.

High Density Head Gaskets

The current head gasket has changed from a 70 pound density to 90 pound density. This increase produces a more robust seal to further prevent head gasket failures. This gasket is backwards compatible.

Nitride Exhaust Valve

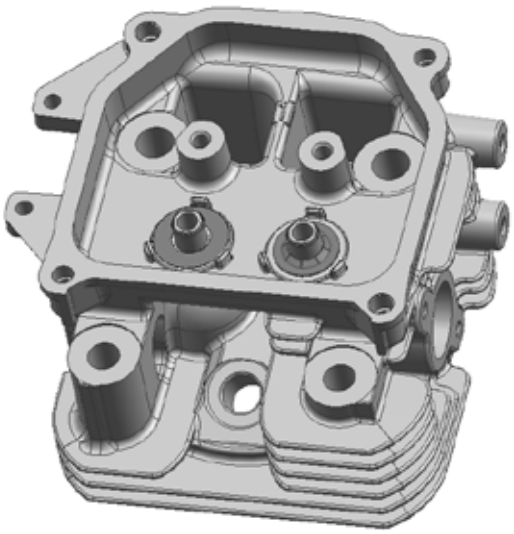
The stellite exhaust valve has been replaced with a steel Nitride coated valve. Black in color, this extremely hard coating has been widely used on valves in the motorcycle industry as well as many performance engines allowing higher resistance to wear along with reduced friction.

The cylinder head has not been changed so the new valve is backwards compatible as well as the old valve will be forward compatible in new engines. These valves cannot be ground and lapping new valves is not necessary or suggested.

Cast Valve Spring Retainers

To simplify assembly and reduce parts, the new design cylinder heads use spring retainers that are cast into the spring seating surface to replace the current retaining cup. Wind up of the spring causes rotation and friction at the seating surface that would wear into the aluminum head. To eliminate the wear on the exhaust side, the spring will seat on top of the valve guide retainer. On the intake side the spring will seat on top of a steel washer. All other parts remain unchanged and allow for backwards compatability.

Current



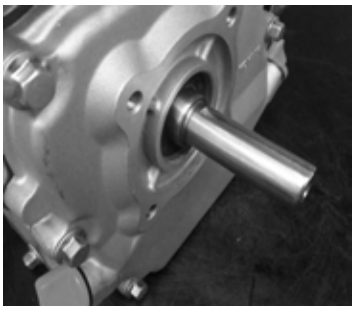
New

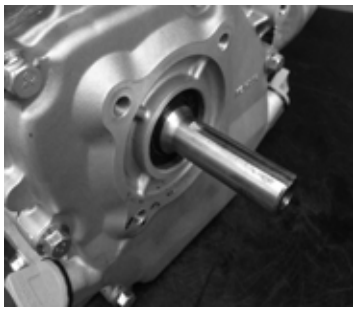
Courage Single

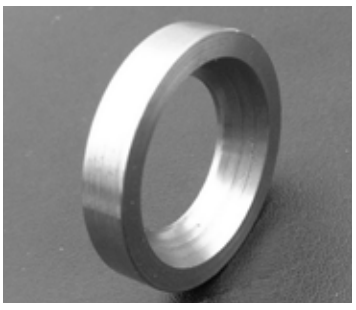
SV470-620 Cam Follower Issue

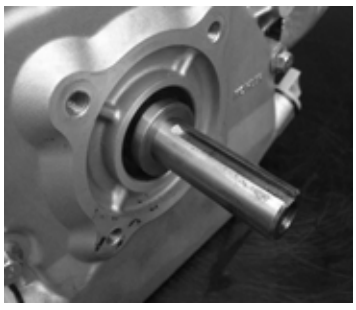
A casting change was made in October of 2011 that allows the cam followers to rotate up and out of the way of the push rods. When this happens the push rods can be installed directly onto the camshaft lobes. A change will be made in the future to address this, however in the meantime Kohler will package short blocks with an attached alert. This will instruct the technician to set the engine with the head up, the followers will fall back into place, and the push rods can be installed without issue.

A visual inspection can be done by looking through the push rod guide hole. While turning the crankshaft you should NOT be able to see the camshaft turning. The followers should block the view of the cam lobe and the push rod pockets in the followers should be visible.









SH265 Crankshaft Shoulder

A change in crankshaft material to ductile iron resulted in a slight change in the crankshaft profile to maintain strength. This change in shape has affected customer fit up in some cases as the shoulder used with their pulleys has changed. A spacer has been designed that will slide over the new crankshaft to recreate the shoulder found on the previous crankshaft. The new shoulder maintains the same spacing in relation to the mounting surface of the closure plate as the previous design. Even the crankshaft length will remain the same.

Courage XT

Model Year 2013 Design Changes

The XT Series engines have focused on weight reductions to make the maneuverability of the mower as easy as possible for 2013. Many changes have been made to shave off almost 2 ½ lbs. (1.1 kg) from the XT6.5 and XT6.75 and almost 4 lbs. (1.8 kg) from the XT8.0.

Low Mount Dipstick and Funnel Hang Tag

A low-mounted dipstick will now be found on the muffler side of the engine with an “Add Oil Before Use” Funnel Hang Tag. This allows the customer to add oil before first use without having to search for a funnel or risk spilling. The extended dipstick option is still available.

New Fuel Tank

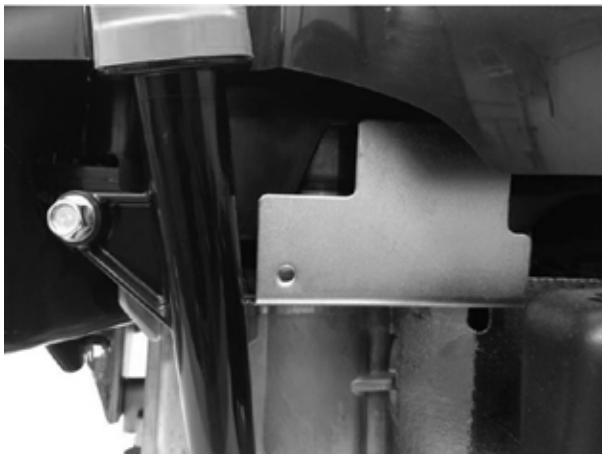
The 1.0 L fuel tank now has integrated mounting bosses for a smooth look over the large screws found on the previous version.

RTV Seal at Pan

No more weeping gaskets with the replacement of paper gaskets to RTV. The oil pan has been modified to remove the gasket and keep the same end play on the crankshaft. With the many design changes in place on these engines, all service parts need to be ordered using the engine spec number.

Finger Guard Change

The finger guard has changed from metal to plastic for a more pleasing aesthetic look.



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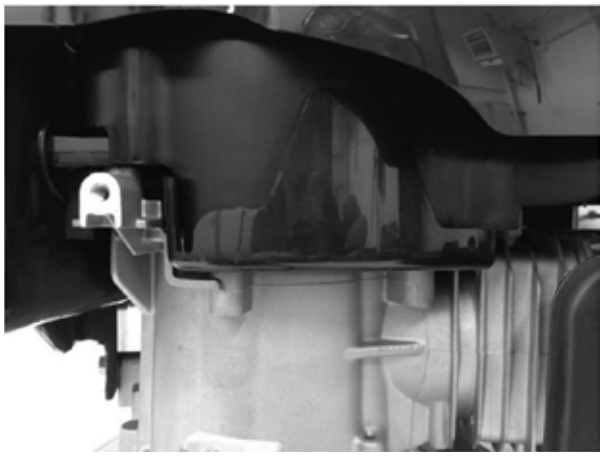


New

New for the XT6.5 and XT6.75

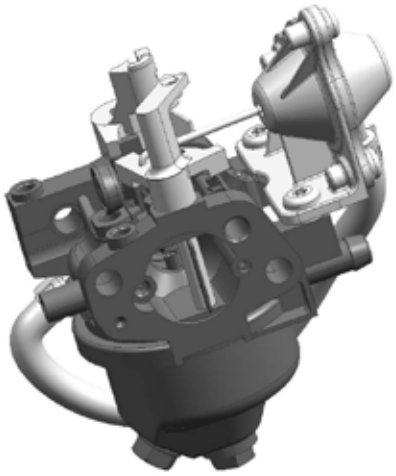
New Smart-Choke™ Design

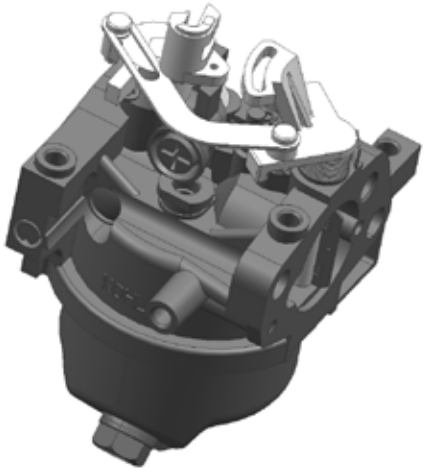
The Smart-Choke™ has been updated to remove the vacuum pull-off function used to open the choke slightly after the engine begins to run. This task will now be handled by using a link from the throttle.

When the engine is cold the auto-choke arm assembly uses a bimetallic spring to close the choke for cold starts. After the engine starts, the choke needs to open slightly to allow more air to pass through the venturi to prevent over choking or flooding.

The new link is designed to allow the choke to fully close during wide open throttle. When the engine starts, the governor closes the throttle from wide open to the set governed speed. As the throttle closes, the link between the throttle and choke operates the choke to a slightly open position.

Current





New

Air Box Design

The smaller XT's have received a redesigned air box that replaces the multi-turn knob with an easy to release latch cover. The standard foam or optional paper element are available.

New for the XT8.0

Improved Cover Design

The large XT has a smoothed cover with curved surfaces to form a more seamless design.

Current

New

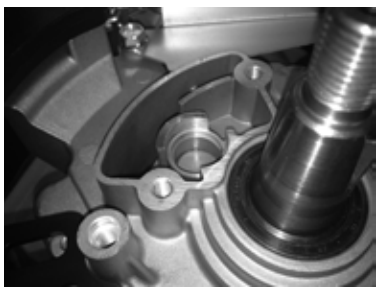
12 mm Spark Plug

With emission standards getting more difficult to achieve, Performance Engineering has changed the XT8.0 to the 12 mm spark plug. The use of a smaller spark plug takes up less area in the combustion chamber and allows for a cleaner more complete burn of the fuel to reduce emission output.

The Kohler part number is 14 132 11-S and can be found on the plug. Socket size used to service this plug is 11/16”.

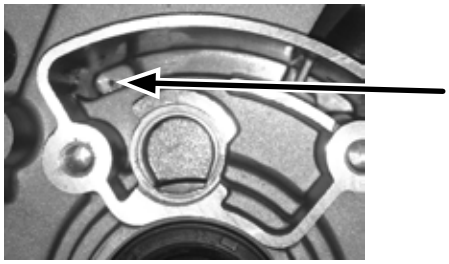
Oil from Breather

The Service Department has received calls concerning oil from the breather system contaminating the air cleaner. On several occasions we have discovered the breather system was not operating properly due to casting interference between the breather reed (disc) and crankcase housing. In some cases the rough cast surface was interfering with the outside diameter of the breather reed not allowing it to open as designed. Once this happens, crankcase pressure builds-up and exits the breather chamber passing oil into the air box.



Cleaning or buffing the casting to smooth the surface next to the reed allows free movement and correct operation of the breather system.

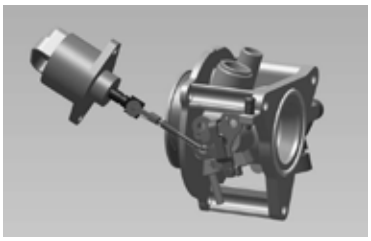
Another area to look at is the drain back hole found under the screen. If the hole is blocked or restricted, oil will not return to the crankcase and ends up in the breather box again. The correct hole size is 1.5-1.6 mm (1/16”).



ECV940-980 with E-Governor Option

It was only a matter of time before the Commercial EFI system advanced to the next line of engines. Using the same successful technology as its smaller brothers, the 999 series of engines begins to emerge with all the advantages you expect from the Kohler closed loop EFI system. Now you can have all the power you need with the fuel economy you want.

First release of this product will use electronic governing similar to what you may have seen on current Kohler twins. This variable speed governing is commonly found on blower units using the same style of Governor Control Unit (GCU) with stepper motor.



LP EFI

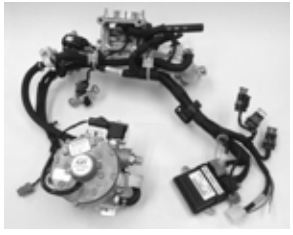
In some parts of the country commercial cutters are expected to have LP powered equipment before they can even bid on a job. Some equipment has been converted from gasoline to LP with significant cost as the kit needs to be certified with the EPA for each engine model and spec.

The Kohler solution is the new PCH & PCV line of Propane Closed Loop EFI engines. Complete and certified from the factory, these models include:

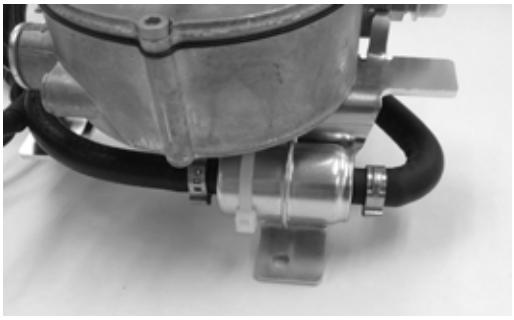
PCH680 PCV680

PCH740 PCV740

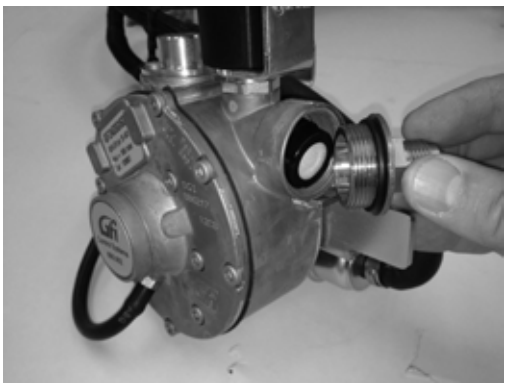
This vapor withdrawal injection system operates very much the same as our current Commercial EFI gasoline system. The fuel injectors, pump and fuel tank are removed and replaced with gaseous injectors, a single stage regulator and special lawn and garden propane tank with additional baffling to prevent splashing and associated running issues.



Other changes include a different connector plug on the harness for the regulator shut-off solenoid. This replaces the plug normally found on the fuel pump module where power logic to the solenoid stays the same. With the key “On” the solenoid is powered for about 6 seconds. If the ECU does not get a signal from the speed sensor, the solenoid is turned off.



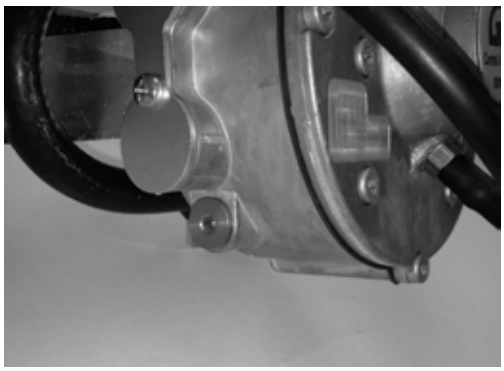
The fuel pods connecting the fuel line to the injectors as well as the injectors have larger openings to allow increased fuel flow to the intake manifold. A small 10 micron metal fuel filter after the regulator is used to protect the injectors with the system operating at 26 psi (1.8 bars) fuel pressure after the regulator.



A button type filter is used at the input side of the regulator to remove large impurities that may come from the supply tank.

As with any LP regulator units, you will find a plug at the bottom to remove and drain any oily deposits that collect over time from the fuel supply.

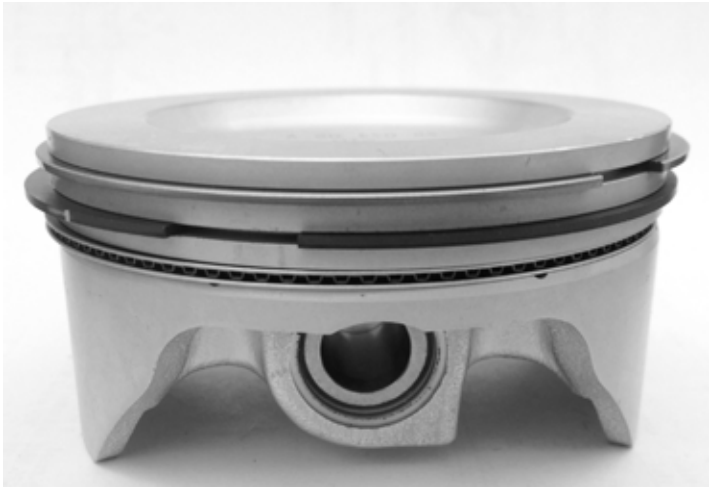
If you have been trained on the Commercial EFI gasoline system the LP EFI will be simple to understand.



Improved Emissions with Piston Design

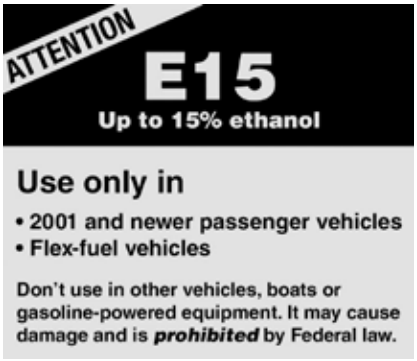
For the Command and Courage Twins with 83 mm bore, Performance Engineering has redesigned the piston to help meet the strict demands of EPA emissions. This piston uses a different ring package that is not compatible with previous designs. The cylinder bore and connecting rod have not changed so the new and old pistons are interchangeable as a set.

Improvements came from the tuned ring package, including piston design, using a chromed top ring face for durability. Ring placement and ring land specs were designed to reduce quench volumes and increase power as well as reduce hydrocarbon emissions.



E-15 Fuel and your Kohler Engine

With E-15 fuel having been approved for sale by the EPA, we need to be aware, and make your customers aware that under no circumstance should E-15 fuel be used in any current Kohler engine. Severe damage or total failure will result in the use of this fuel. Also, E20-E85 blends are not to be used in any Kohler engine. Listed is a copy of the Kohler Fuel Recommendations.



FUEL RECOMMENDATIONS

	⚠ WARNING
	Explosive Fuel can cause fires and severe burns. Do not fill fuel tank while engine is hot or running.
Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Never use gasoline as a cleaning agent.	

NOTE: E15, E20 and E85 are NOT approved and should NOT be used; effects of old, stale or contaminated fuel are not warrantable.

Fuel must meet these requirements:

- Clean, fresh, unleaded gasoline.
- Octane rating of 87 (R+M)/2 or higher.
- Research Octane Number (RON) 90 octane minimum.
- Gasoline up to 10% ethyl alcohol, 90% unleaded is acceptable.
- Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blend (max 15% MTBE by volume) are approved.
- Do not add oil to gasoline.
- Do not overfill fuel tank.
- Do not use gasoline older than 30 days.

Kohler PRO Series Fuel Treatment

Unique 3-1 formula protects your engine and delivers peak performance.

- Fuel Stabilizer
- Fuel system cleaner
- Corrosion inhibitor

Today's fuels begin degrading in 90 days, and the hydrocarbons in the fuel react with oxygen to change the composition of the chemicals within the fuel.

Kohler PRO introduces anti-oxidants into the fuel to keep it fresh for 12 months or more ensuring easy starting and peak running performance.

Oxidized fuels cause varnish and gum to build up in the lines, filters, and small orifices in the carburetor and injectors.

Kohler PRO provides an advanced detergent to prevent gum and varnish to build up when used at the regular treatment rate of ½ oz. per gallon of fuel. When used at twice the treatment rate it will dissolve accumulated deposits from the fuel system.

The heating and cooling of the fuel creates moisture to condense in the fuel tank. Ethanol based fuel attract this moisture which can result in phase separation (water and ethanol mixture drops to the bottom of the tank).

Kohler PRO includes a corrosion inhibitor for ferrous and yellow metals, and the hydrogen bonding of the additive to the water molecules helps pass the water through the system.

Kohler PRO Series Fuel Treatment available in:

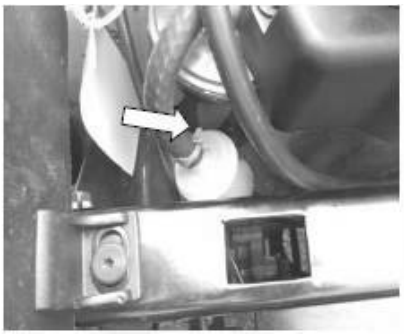
- 4 oz. bottle 25 357 35-S
  - Easy to use measuring reservoir
  - 12 bottles per case
  - Case 25 357 38-S
- 32 oz. bottle 25 357 36-S
  - Easy to use measuring reservoir
  - 12 bottles per case
  - Case 25 357 39-S

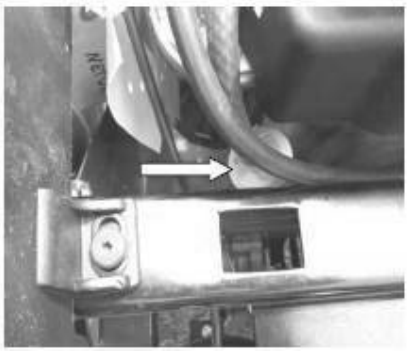
Service Tips

In our service department we receive technical service bulletins from OEM's, and service tips from you, our customers. Below are a couple of examples received from the field.

Oil Filter vs. Fuel Filter

During set-up of a new machine it may be possible for a part of the machine to be in contact with the oil filter. In the picture on the left we see a fuel filter that was wedged between the chasis and the oil filter. Once in operation the fuel filter had rubbed a hole in the oil filter resulting in a high pressure leak and catastophic engine failure. A simple re-route of the hose will eliminate the problem.





Pre-filling Oil Filters

Initial engine start-up has the greatest potential for causing engine wear and bearing failure. When the starter begins to rotate the engine there is no oil pressure present until the pump has made several revolutions. During this time the bearings rely on residual oil that is present from the last time the engine was run. If the oil has not been changed at regular intervals or has degraded from heat, dirt or fuel contamination, the probability of failure is multiplied. This is another reason why regular oil change intervals become important to engine longevity.

During the oil change pay attention to the Owner's Manual instructions for pre-filling the oil filter. Remember that during start-up it takes several revolutions of the pump to create oil pressure when oil is present. This time is multiplied to several seconds after the engine is running if the oil has to move from the pump through the empty filter before pressure begins to build.

Owner's Manual Instructions:
Place new filter in shallow pan with open end up. Fill with new oil until oil reaches bottom of threads. Allow 2 minutes for oil to be absorbed by filter material. Apply a thin film of clean oil to rubber gasket on new filter. Refer to instructions on oil filter for proper installation.

SCAG POWER EQUIPMENT

SERVICE INFORMATION SHEET 178

Wire Harness Modification Required When Installing Kohler CV680-3036 Engine on STHM Models

When installing a Kohler CV680-3036 engine on STHM models with a serial number of C5399999 or lower, a 14 gauge, stranded wire must be added to the main wire harness as shown in Figure 1.

-NOTE-
The wire harness adaptor supplied with the CV680-3036 engine from Kohler is not used with the STHM

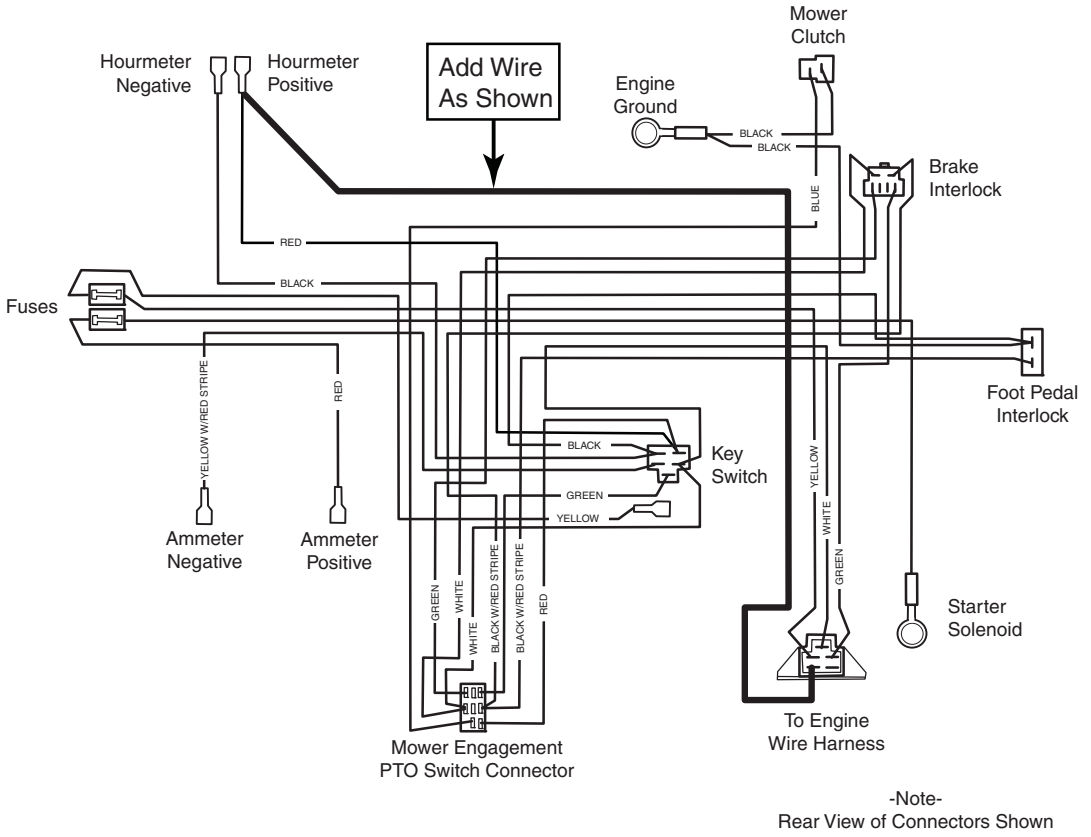


Figure 1. STHM Wire Harness Modification

SI178 - August 23, 2012

Fuel Level vs. Head Gasket

We have had reports from the field that overfilling the fuel tank has caused head gasket failure. The products involved were on truck mounted units. What happened was the user filled the tank to the top of the filler neck leaving no room for expansion of the fuel. When the fuel warms up and expands, combined with the rocking on the back of a truck, the pressure of the fuel in the tank exceeded the pop-off force of the float/inlet needle causing fuel to flood the cylinders. Upon starting the engine, the resulting hydro-lock caused the head gasket to fail. If you receive a complaint of failed head gaskets on a newer engine check for evidence of washed down cylinders and/or gasoline in the engine oil.

Diesel Dealers Submit Claims Direct to Kohler

Effective immediately all Kohler Registered Diesel Dealers can submit diesel warranty claims directly into the Kohler Warranty System. Submitting to the Central Distributer is still optional.

Please select FACTORY in the Accepted Approver drop-down then type and enter TALLEN as the Factory Accepted Approver.

Kohler Co. will still have to enter Unit Information on claims with engine serial numbers starting with SRE or SRI. This number should be entered in the reference field of the claim. No delays are expected in claim processing times.

Policy Adjustment Program

The Kohler Engines Warranty Policy and Procedure Manual found on Kohler PLUS is an excellent resource for you as a Kohler Dealer. We would like to draw particular attention to the Policy Adjustment program mentioned in Section 2-F-4 on page 5.

If a customer insists on warranty coverage for a situation you feel is not covered by the standard policy, contact your Central Distributor for Policy Adjustment Authorization.

This is an excellent program for you to utilize for any failure that you and/or your customer feels happened prematurely and outside of their control. The program is targeted for units that have been well maintained and have lower operating hours. If a Policy Adjustment is granted the Central Distributor will typically arrange to provide you with the parts at no charge and the customer will be expected to cover the labor and miscellaneous expenses only.

Tradition. Innovation. Support.
2013 Factory Schools

Level I

The Level I course is designed to provide students with a working knowledge of Kohler four-cycle engines and engine systems. It is assumed the students will have a basic understanding of small gasoline engines upon enrolling in the class.

Information covered will include:

- Kohler PLUS
- Use of Measuring Instruments
- Ignition/Electrical Theory
- Warranty Information
- Troubleshooting
- Failure Analysis
- Fuel Systems
- Engine Tear Down/Reassembly

2013 Level I School Dates and Locations

February 5-7	Columbus, OH	Gardner, OH
February 12-15	Olive Branch, MS	Medart Inc.
February 18-22	Calgary, AB	Lotus Equipment
February 19-22	El Reno, OK	Medart Inc.
February 26-March 1	Edwardsville, KS	Medart Inc.

Level II

The Level II course is designed for students who have completed a Level I course at Kohler, at a Central Distributor, or have passed the Kohler Expert Dealer Test. The class size is smaller to allow for more one-on-one instruction and hands-on activities.

Information covered will include:

- Electrical Systems – Ignition, Starting, Charging
- Fuel Systems – EFI, Gasoline, Gaseous
- Advanced Failure Analysis
- Engine Tear Down/Reassembly
- Hands-On Diagnosis and Troubleshooting in a Variety of Areas

2013 Level II Factory Schools
(Kohler Location Only)

March 4-8
August 5-9
December 9-13

Classes are filled on a first-come, first-served basis.
Submit your registration soon!

KOHLER ENGINES

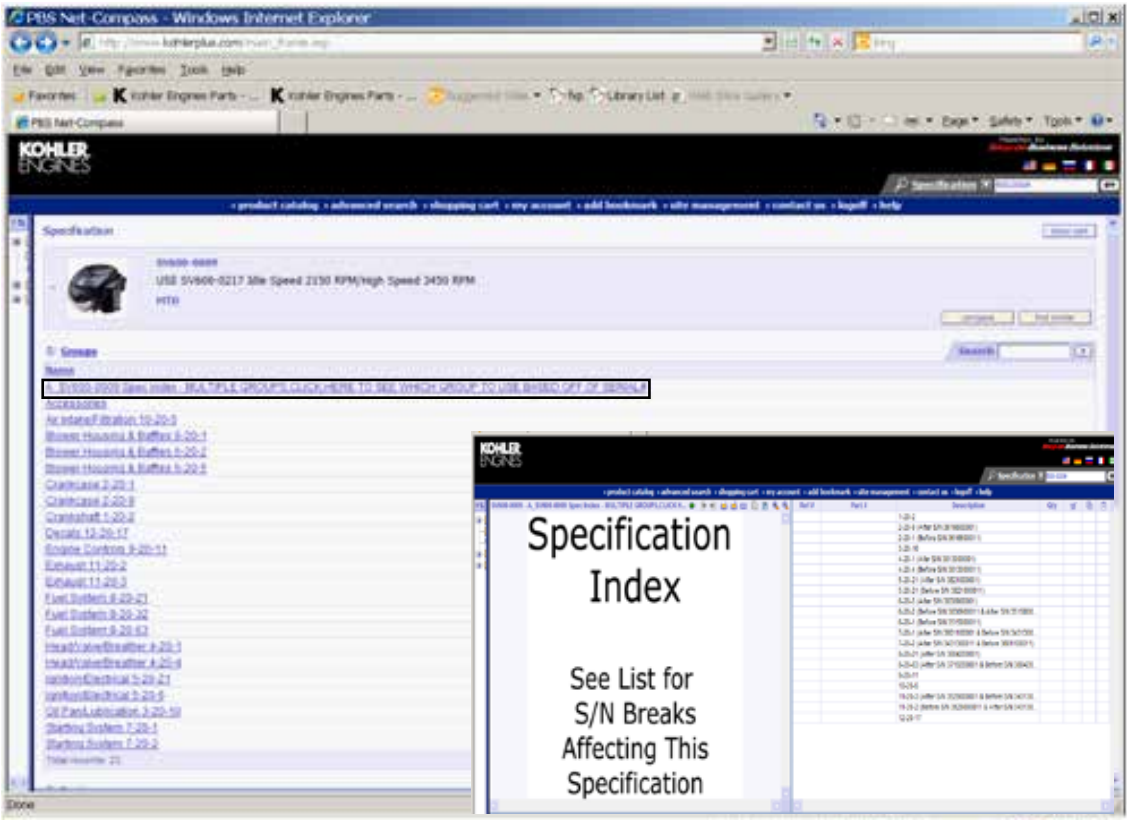
KohlerPlus

Composite Parts List

A customer calls you and wants to order part 17 shown in group 3 on spec CV740-0001 but doesn't know the part number because the illustration shows the image but the listing does not as that particular spec does not use part #17 – how do you get the service part number? Answer….. Start at the Product Catalog and select the engine model. Scroll down to the Owner's Manual heading and open the composite PDF file for the CV18-750, Command Pro Twin family. In an effort to give you the full listing of service parts for each family, we have created a composite PDF file that we post under each model showing all of the components that the engine family has used. These composite PDF files are live documents and are updated as new components are released. The group composite illustration is the artwork that posts on Kohler PLUS in the spec but remember that the composite drawing covers the life of the engine family where as the BOM in the right hand column in Kohler PLUS is the specific part for the spec you are looking up. The composite drawing will always have more reference numbers then you will find the in the spec specific BOM.

Serial Break Indexes

Another customer calls and is looking for a blower housing for his SV600-0009. He goes to Kohler PLUS and sees multiple blower housing groups shown. How does he know which one he needs? The Spec Index (the first group under the spec outlined below) will show all of the groups that this spec has used in its lifetime and the serial break behind the group will help you and the customer determine which blower housing applies to his engine. Once you identify the group needed you can arrow back and open the appropriate group 6 to find the part. This process allows us to show the history of the engine spec. This is a work in progress and not all specs have been addressed. Kohler PLUS is a static copy of the bill of material on the day that the spec and group is being assembled. Please let us know that a specific spec needs to show multiple group versions and we will work quickly to get the serial breaks posted.



BULLETINS

Below is a list of all service and parts-related documents released or revised in late 2011 through mid-2012. The most up-to-date service and parts-related information can always be found at: www.kohlerplus.com.

Parts Bulletins

PB-236 Rectifier-Regulator, 25 403 21-S (Rev. 1/12)

PB-244 Cylinder Head Service Kits for Command Twin Engines (Rev. 10/11)

PB-254 Short Blocks for Courage Single Cylinder Engines (Rev. 9/11)

PB-257 New Cylinder Head Gaskets

Service Bulletins

SB-255 Cylinder Head Studs (Rev. 10/11)

SB-298 Sticking Inlet Needles (Rev. 8/12)

SB-300 Improved DSAI Ignition modules (Rev. 5/12)

SB-309 Smoking from Operation at an Angle (Rev. 10/11)

SB-312 EFI Fuel Pump Module Baffle Thermal Distortion

SB-313 Fuel Starvation on SH265

SB-314 EFI Running Issues and Fuel Pump Failures

SB-315 Key Switch Related Starter Failures

SB-316 CH440 Engines on Compressor Applications

2012-2013 Update Questions

1) All Courage Twin stators were changed to create a 12 amp charging system. The service replacement stator is:
a. 10 amps.
b. 30 amps.
c. 12 amps.
d. 15 amps.

2) Brass blower housing inserts were added to Command Twins for securing:
a. the cylinder heads to the housing.
b. the rotating grass screen.
c. the webber grill guard.
d. heavy-duty air cleaners.

3) The Stellite exhaust valve in the Courage Twin has been replaced with a coated valve commonly used in hi-performance applications. The coating is:
a. Molybdnum.
b. Kryptonite.
c. Ferrous Oxide.
d. Steel Nitride.

4) E15 fuel is now available at the pump. Kohler engines are now approved for ethanol up to:
a. E-20.
b. E-15.
c. E-10.
d. All the above.

5) A new dipstick has been developed for the CV940-1000 to prevent overfilling on specific applications. What is the color of the new cap?
a. Yellow
b. Orange
c. Red
d. Black

6) A temporary casting change on the SV single cylinder engine allows the cam follower to swing away from the cam lobe if the push rod is not installed. If this happens when installing a short block, the technician should:
a. remove the closure plate and make sure the followers are in the correct position.
b. rotate the engine until to followers fall back into position.
c. set the engine with the head up allowing the followers to fall back into position.
d. grease the tips of the pushrods and place them directly against the cam lobe.

7) When changing the oil and filter it is very important to:
a. use the proper oil weight for the expected ambient operating temperatures.
b. use the dipstick as a guide when filling the crankcase.
c. pre-fill the oil filter with new oil before installing.
d. All of the above.

8) What makes the Secondary Air Injection work?
a. Air comes from a control valve mounted near the exhaust system.
b. Air enters the exhaust manifold from the cooling fan.
c. The fan supercharges the air entering the air filter.
d. A catalyst is used to oxidize hydrocarbons.

9) The XT line of engines will eliminate weeping oil pan gaskets by:
a. removing the gasket and using RTV on the gasket surface.
b. implementing an o-ring design.
c. replacing the paper gasket with steel using a rubber seal around the I.D.
d. applying RTV to each side of the gasket.

10) When repairing a DSAI failure, the 25 176 13-S Fuse Lead Kit should be installed:
a. at the electric clutch.
b. between the B+ lead on the reg,/rect. and the large positive post on the starter solenoid.
c. between the B+ lead on the reg,/rect. and the key switch.
d. between the key switch and the large positive post on the starter solenoid.

11) The new Commercial EFI high pressure fuel line connector has changed. The new connector uses:
a. two opposing red buttons that are pressed to unhook from the pump.
b. a single white button that is pressed to unhook from the pump.
c. two red clips that pop out to unhook from the pump.
d. a single white clip that pops out to unhook from the pump.

12) The XT6.5-6.75 use a new designed Smart-Choke™ with the vacuum pull-off removed. What keeps the engine from over choking at start-up?
a. As the throttle closes, a link between the throttle and choke begins to slightly open the choke.
b. A spring mounted in the lever allows the intake air to pull the choke plate open.
c. Air pressure from the cooling fan is used to operate a lever to open the choke plate.
d. The bimetallic spring on the muffler quickly opens the choke as soon as the engine starts.

13) When installing an exhaust stud in a Command cylinder head:
a. the "Dot" is inserted into the head with loctite.
b. the nut should be difficult to turn when installing the muffler.
c. the interference side goes into the head and the "Dot" should be visible.
d. the interference side goes out and the stud can be installed into the head finger tight.

14) EFI code P0337 is activated when the:
a. battery is allowed to go dead and the key is "Off".
b. ECU is disconnected and the key is "On".
c. engine is run out of fuel.
d. ECU senses a voltage drop of 2 or more volts and there is no signal from the speed sensor.

15) The CV940-980 is now available as ECV940-980 using the Commercial EFI system. What is the second new option for this engine?
a. 40 Amp charging system
b. Electronic governor system
c. LP EFI
d. Smart-Choke™

16) What is NOT an advantage of the two barrel carburetor on Command Twins?
a. No more problems with fuel distribution in the manifold.
b. You can get up to 25% fuel savings.
c. Allows precise tuning.
d. Minimizes emissions.

17) Kohler has introduced 4 utility engines with gear reductions. What is NOT one of the models?
a. CH270 6:1
b. CH270 2:1 with wet clutch
c. CH395 2:1 with wet clutch
d. CH440 2:1 with wet clutch

18) The LP EFI is now available as model PCH and PCV as a 680 and 740. What is NOT a feature of this system?
a. Closed loop system
b. Dual fuel system
c. No adjustments to the regulator
d. Vapor withdrawal system

19) All Command Twin short blocks now have mounting bosses for EFI. This may cause fit-up problems with some:
a. breather reeds.
b. closure plates.
c. cast aluminum oil coolers.
d. intake manifolds.

20) What is NOT one of the features of the new Courage Twin oil pan?
a. Aluminum cavity oil pump
b. Improved structural integrity
c. Bottom oil drain
d. Increased surface area of the PTO bearing

KOHLER ENGINES

ENGINE DIVISION, KOHLER COMPANY, KOHLER WI 53044