

## 1999 KAWASAKI ALL-TERRAIN VEHICLES ON TARGET



### INSIDE

<b>Feature</b>	Kawasaki ATVs . . . . .	2
	1999 Green Bikes . . . . .	6
<b>Regional News</b>	Update . . . . .	4
	Parts Electronically . . . . .	3
	Parts Coordinator . . . . .	5
	Key Codes . . . . .	5
	Service Contest . . . . .	5
<b>Tech Tips</b>	Batteries . . . . .	7
	Mule Torque . . . . .	8
	KAF620 Camshafts . . . . .	8
	1100 Carbs . . . . .	9
	ZX-9R Valves . . . . .	9
	KX125/250 Seat . . . . .	10
	1100 Starting . . . . .	10
	Vulcan Carbon Build-Up . . . . .	11
	Prairie 400 Cooling . . . . .	11



# Kawasaki Takes Aim at ATVs

by John Griffin  
Instructional  
Designer/Instructor

Kawasaki has taken another giant step in the growing ATV market with thoroughly updated Prairie® 400 models and the all new Prairie 300 4x4 and Prairie 300. These new models use the Prairie 400 platform with the easy-to-use continuously variable transmission mated to an economical air-cooled Bayou® 300-based motor.

Kawasaki worked overtime building the ATVs which customers want. There are distinct equipment level differences between the premium 4x4 models, the

economical 2x4 models, and even between the Prairie 400 and 300 models. The premium 4x4 models come with speedometers (digital on the 400 and analog on the 300) and composite racks. All the Prairies have new creature comforts like a 12V DC cigarette lighter style outlet near the handlebars, molded pin accessory connector in the rear, and an easier to use automotive style shift pattern.

## Prairie 400 4x4 and Prairie 400

The '99 Prairie 400 models are better in nearly every respect. They have 3 more horsepower and more torque

thanks to a flat top piston bumping compression from 9.2:1 to 10.2:1 and a freer flowing muffler. New crankcases house a 1.1-lb. lighter crankshaft that quickens throttle response and improves acceleration. A new transmission eliminates the need for the extensive shifting linkage by replacing the shift drum with a cam plate to control the shift forks. The shift lever links to the cases with one short shift rod instead of two.

A new Kawasaki Automatic Power-Drive System (KAPS) yields a wider drive ratio spread and has fewer moving parts to make it lighter and more compact. It also



**This new CVT system in all '99 Prairie models yields a wider gear ratio for more pulling power, quicker acceleration, and higher top speed.**

runs cooler for longer belt life and more durability.

**CVT Ratio Spread**  
1998 .92 ~ 4.16:1  
1999 .81 ~ 4.2:1

Mechanics in wet and muddy areas will be happy to see improved sealing and protection for the rear drum brake. The rear drum cover is now thicker steel and has a guard under it. Special seals and O-rings help prevent leakage and a new steel labyrinth plate helps prevent damage that causes leakage.

The King-of-the-Hill Prairie 400 4x4 gets a new digital meter and its own unique look with aggressive cat-eye headlights and front grill treatment. The digital meter features a speedometer, odometer, twin trip meters, clock, hour meter, and a



## KVF400 4x4

The flagship '99 Prairie 400 4x4 has more power, better handling, and new features including its own front grille treatment.

Cont'd on page 12

**K-TECH News**

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**K-TECH News Staff**

**Publisher**  
Kawasaki Tech Services

**Publications Manager**  
Don Church

**Executive Editor**  
Gary Herzog

**Editor-in-Chief**  
Gregg Thompson

**Communications Editor**  
John Griffin

**Regional Editors**  
*Piscataway/Grand Rapids*  
Fred DeHart

*Atlanta/Dallas*  
Walter Rainwater

*Irvine/Tacoma*  
Robert Taylor

**Contributors**  
Dave Behlings, Carlos Johnston,  
Craig Martin, Keith Pestotnik,  
Charles Yim, Steve Rice

**Graphics/Production**

*Graphic Art*  
Gregg Thompson

*Photography*  
Dave Corey

*Production*  
Holland Marketing Services

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# Micro-K vs. Electronic Parts Catalogs

by Don Church  
*Manager, Service Training  
and Communications*

With the recent introduction of KIC (Kawasaki Information Center) and the continuing popularity of other Electronic Parts Catalogs (EPCs), nearly every Kawasaki dealer can look up parts electronically.

Although KIC contains information not available on other EPCs, it is still essentially a tool for selling and ordering all Kawasaki parts. It has value-added features such as service bulletins, warranty flat rate codes, and sales literature to extend its usefulness to other areas of a dealership.

KIC was never intended to completely replace a Micro-K deck. As you know, we have continually added information to the microfiche making them a critical archive of information, in addition to an up-to-date working tool at the parts counter. In fact, Micro-K is

still the quickest method for Kawasaki to send you model information because production lead time is short and the subscription service provides a mailing every month.

Microfiche provide a backup to paper service bulletins and Assembly & Preparation sheets, for example, and are still very inexpensive and effective.

**We strongly advise every dealership to maintain at least one Micro-K subscription!**

KIC is one piece in KMC's overall strategy of providing information electronically. KMC's Electronic Document Distribution System (EDD) is another piece in our overall plan that will be introduced soon. Remember, we will not go back in time to convert all old service manuals and other materials into electronic documents.

I hope this provides a better understanding of KIC and the role it plays. One thing we are striving to avoid is KIC "spilling

over" onto two CDs. This is another reason to limit information and cautiously consider enhancements. ♦

**KIC Training CD**

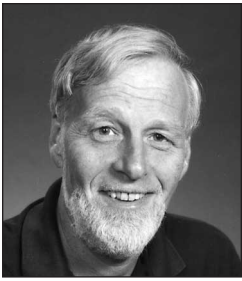
Watch your mail closely in mid-July, because you will receive a new multimedia training tool on CD-ROM, "Getting the Most out of KIC." It will be sent to all K-Share dealers at no charge. The CD was designed to run on the same Micron computer you use for K-Share or a similarly capable PC.

This training can help any employee in your store to use KIC quickly and effectively. For those who have used KIC for a while, it will take their knowledge to the next level.

The training consists of demonstrations, detailed explanations, and quizzes to test student understanding. There is an extremely handy Index that can be used as a reference to review specific KIC features. There is also a Guided Tour with an overview of all the features of KIC.

A final quiz at the end of the program allows the students to test their overall understanding of KIC. Students can send their completed quiz to Kawasaki to receive a certificate of completion for their efforts. ♦

	<b>KIC</b>	<b>VS.</b>	<b>MICRO-K</b>
<b>Distribution</b>	<b>6 times a year</b>		<b>12 times a year</b>
<b>Available Service Bulletins</b>	<b>Current 10 years</b>		<b>All</b>
<b>Available Sales Literature</b>	<b>Current 3 years</b>		<b>None</b>
<b>Assembly &amp; Prep. Sheets</b>	<b>None</b>		<b>Most models</b>



**PISCATAWAY/  
GRAND RAPIDS**

**Record Key Codes on K-Share**

You can record the key codes of your Kawasaki products in one of four dealer memo fields on your K-Share VIP (Vehicle Information Processing) screen. In this way, you will always have the key code available.

To set up a dealer memo field for key codes, do the following:

- Double click the **K-Share** icon to open the K-Share screen
- Double click on the **VIP** icon.
- Click on **Registered** or **Not Registr** units. This brings up the VIP screen. The dealer memo fields are positioned just to the right of the "Prod Type" field.
- Go to the top of the screen and click on **Options**
- Click on "Dealer Memo Field Maintenance."
- Choose one of the four dealer memo fields and type "KEY CODE."
- Click **OK**.

The dealer memo field you picked will now have the heading "KEY CODE."

Now record key codes for your complete Kawasaki inventory into this field. This may take a while, but the time and expense of even one lost key set will pay for it. As you receive new product from Kawasaki, continue to record the key codes in this memo field. Now if you or your customer ever need a key made, the key code will be available.

Remember, code books and cutting equipment can be obtained by calling Curtis Industries at (800) 555-2878.

*Fred DeHart  
201 Circle Drive N. #107  
Piscataway, NJ 08854  
(908) 469-1221*



**ATLANTA/DALLAS**

**Wal☆Mart Goes to School**

As you probably have heard, Wal☆Mart is purchasing many Kawasaki Mules for use in the Courtesy Patrol of their



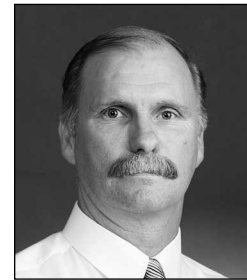
parking lots. They are using the KAF620 and KAF300 models at various locations. In the future, they will continue to replace their present vehicles with Mules.

Kawasaki recently held a Mule Familiarization class in Atlanta for some employees of Wal☆Mart. This was not the usual technical class with hands-on training. These attendees, including National Manager David Jones, are district and divisional managers and supervisors. They are responsible for the upkeep and maintenance on Mules in their area. They learned of the capabilities and limits of the Mules. The most important reason for the class was to familiarize them with routine and daily maintenance schedules. They don't want any downtime, so preventive maintenance is vital.

Many Wal☆Marts do not have any service capabilities. None of them have trained personnel or parts for Mules. This is the perfect opportunity for Kawasaki dealers to con-

tact their local Wal☆Mart manager or supervisor and work out a deal to service their Mules. **Good business is where you find it.**

*Walter Rainwater  
6110 Boat Rock Blvd. S.W.  
Atlanta, GA 30378  
(404) 349-2000*



**IRVINE/TACOMA**

**A Great Year**

We just completed our annual training meeting here at KMC to review the '97/'98 training year. And what a year it was! In fact, it was the best training season on record. A total of 1497 students attended classes in Irvine, Atlanta, Piscataway, Grand Rapids, Dallas, and Tacoma as well as our Service Update '98 and K-Share/KIC classes across the nation.

In the West region, student attendance increased by 64 percent! This is partly due to the great attendance at our new training center at Bates Technical College in Tacoma, Wash. We have responded by adding even

*Regional News -cont'd*

more motorcycles, Jet Ski® watercraft, and Mule utility vehicles at Bates.

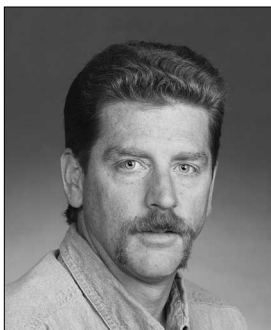
The Police motorcycle course has been expanded into specialty classes that include Engine Service, Chassis Service, Fuel System Service, and Electrical System Service on the KZ1000-P motorcycle. These classes will be scheduled back to back so students can attend them all or just individually. Classes will be held across the nation during the upcoming year. To register, call (949) 770-0400 ext. 2452.

We also support private and public education. Last year we donated 44 units to schools across the nation including motorcycles, Jet Ski watercraft, and Mule utility vehicles. These schools are a great resource for entry-level technicians.

This year brings even more classes as the 1999 model year offers some totally new units. We will also be at the same cities for our Service Update '99 class. These popular classes fill up quickly, so sign up early!◆

*Rob Taylor*  
9950 Jeronimo Road  
Irvine, CA 92618  
(949) 770-0400

## Welcome Parts Data Coordinator



Hi, I'm David Behlings, the new Parts Data Coordinator. I began this job in February and I feel comfortable answering your parts data questions because of my nine years as a technician at a top Kawasaki Ichiban dealer-

ship. I have spent my last nine years here at KMC, first as a shop technician and later as a Hot Line representative. This Kawasaki background helps me to produce microfiche, parts catalogs, and update KIC.

The KIC program keeps me especially busy. KMC has to be proud of coming out with an electronic parts catalog that had 1063 models, in its first issue! Managing and updating all of that data every two months is a sizable job, and of course, there are

occasional errors.

If you find errors on KIC, please print out that page, write an explanation of the problem, then mail or fax it to me. If you find microfiche problems, it is also helpful to use KIC to print out the page so you can identify the error. This seems to be the best method to communicate parts data problems. If you need quicker help, just call.◆

*David Behlings*  
9950 Jeronimo Rd.  
Irvine, CA 92618  
(949) 770-0400, ext. 2573  
Fax, (949) 460-5629

## Write Down Those Key Codes

*by Carlos Johnston*  
Service Support Coordinator, Latin America

As you may know, Curtis Industries offers Kawasaki key-cutting equipment. This eliminates the need for expensive locksmiths or lock sets, unless you don't know the key code. Kawasaki does not presently track any key codes in our computer or stamp key codes anywhere on the vehicle or locks.

It is critical to record the key code every time you have a chance to and make sure the customer is aware of this information. I recommend you record the key code on the A&P checklist, your K-Share VIP screen (see Fred DeHart's article in this issue), the Owners Manual during PDI, and on the sales contract at the time of sale. It's also a good idea to always record key codes on repair orders when customers bring vehicles in for service.

You'll be the hero if a customer loses his keys and you not only have a key cutter but you've also taken the time to record his key code. And if you lose the customer's key while a bike is in for service, having a key cutter and the customer's key code will save you much embarrassment and trouble.

The KEY is for you to faithfully record your customer's key codes. Call Curtis Industries [(800) 555-2878] for information on key-cutting equipment.◆

## The New Kawasaki Service Contest is Coming

*The upcoming issue of  
K-Tech News will  
have Part One of the  
new Kawasaki Service  
Contest. This is your  
chance to show your  
knowledge and win  
awards.*



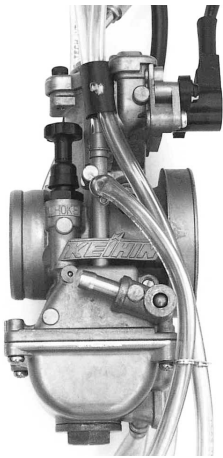
# 1999 Green Bikes

by John Griffin  
Instructional  
Designer/Instructor

The KX125 and KX250 are the big news for 1999 with more power, less weight, and improved handling. The KX60 received a new connecting rod with an improved big end bearing and silver-plated thrust washers to enhance durability. The rest of the green bike lineup is unchanged except for attractive new graphics and colors, especially the KDX models.

## Engine

Kawasaki Throttle Responsive Ignition Control (K-TRIC) is now on two KX models. The KX125 and KX250 have



**The new Keihin PWK S “shorty” carburetors feature a throttle position sensor tied to the ignition, the power jet system, and a shorter body with the slide, needle, and main jet 12mm closer to the intake port.**

new Keihin PWK-S “shorty” carburetors with a throttle position sensor connecting to the ignition. Ignition timing varies with different throttle settings and engine RPM for better engine response and more power, especially from 0 to 1/3 throttle. The carburetors are called “shorty” because the body is actually shorter, like the works bikes, with the main jet, slide, and needle 12mm closer to the intake port to enhance throttle response and top-end.

The KX125 has new port timing for more top-end power and revised intake and scavenging pathways to add torque. A new KIPS valve dramatically boosts power from bottom to top because it sits closer to the piston and fits tighter in the cylinder to prevent blow-by. A deeper cover for the KIPS valve allows the valve to open easier. The valve actually displaces enough air space that it generates air pressure trying to resist it opening.

Both models share changes to lighten the engines and reduce rotating weight, helping them rev quicker. Excess metal was carved from the kickstart, primary, clutch, and transmission gears and a magnesium outer clutch cover drops some



weight. The engine side of the new airbox is angled to speed airflow around the shock to the carburetor and a stiffer boot doesn't collapse under high rpm, saving top-end power.

The already potent KX250 motor features a few internal changes with a taller first gear ratio and more flywheel effect (from 4.5 kg-cm<sup>2</sup> to 4.9 kg-cm<sup>2</sup>) to more than offset the lighter rotating mass helping to tame the beast!

## Chassis

The '99 bikes are more nimble, responding quicker to rider input without losing stability. The frames are lighter with a flatter seat layout, allowing riders to move freely and sit closer to the steering stem which dramatically quickens steering. The main frame section on both bikes use thinner wall tubing and the top tubes are angled down more to allow a lower fuel tank and flatter seat. A square section aluminum subframe reduces weight.

The KX125 gets its own

unique frame in '99. In years past, the KX125 and KX250 shared the same geometry and main frame dimensions (other than engine mounts). The '99 KX125 steering head is pulled back 15mm and the swingarm is 10mm shorter for quick response and better traction. The KX250 uses the same successful geometry as in '98. Both bikes have a lighter and stronger swingarm. The KX125 also gets impressive U-shaped DID rims that resist heavy mud buildup.

The front forks on both machines use new rubber bottoming dampers and longer bottoming cones to reduce bottoming and metal-to-metal impacts. The outer fork tubes are smaller at the upper clamp (from 54mm to 52mm), and both the inner and outer tubes are stronger with more overlap for better action, especially on “slap down” landings. Several fork internals are now aluminum instead of steel to reduce unsprung weight. New front axle clamps hold a lighter one-



piece axle with threads only beyond the clamping area that requires a new assembly procedure.

A lighter rear shock has high- and low-speed compression damping adjustability. The '98 models had just a low-speed adjuster. High-speed compression controls quick shock movements like hitting a "curb" bump or slamming onto flat ground after a large jump. Low-speed compression controls slower shock movements like when landing smoothly on the downside of a double jump or squatting under acceleration.

Every detail has been considered. The grips are softer and have a flat pattern on the palm side. The rear axle adjuster bolts are 10mm instead of 8mm. A new clutch cable is easier to adjust and routed for easier clutch pull. New rear brake pads have a thicker backing plate and ceramic coating to control heat and eliminate warping. The Uni-Trak linkage bearings are revised to be lighter and easier to reassemble. Kawasaki thought of it all, so you wouldn't have to. ♦

## Where Have All the Batteries Gone?

by Gregg Thompson  
Product Support Supervisor

Over the past few years, we have noticed that dealers are replacing batteries in vehicles at an ever-increasing rate. To make matters worse, it seems that the newer technology batteries, especially Maintenance Free, are the ones being replaced most frequently.

In trying to figure out what is behind this trend, we ran across a little known fact about charging dead batteries. If the battery is discharged and the surface voltage is below 11.5V, the battery may need to be "shocked" back to life with a high voltage charge (up to 25V) for about 10 minutes. Then continue charging at the normal rate of about 1/10 the ampere-hour rating of the battery until fully charged.

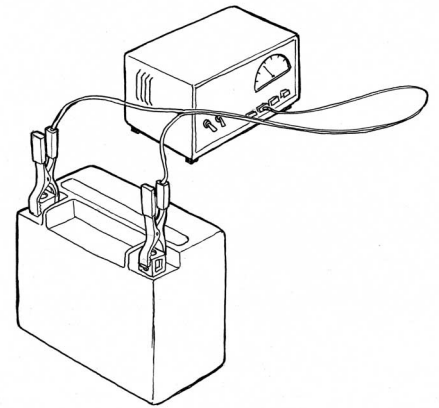
This quick high-voltage charge is needed to get the plates to begin receiving the charge. Once they begin receiving the charge they will continue to charge at the slower rate until full. Be aware that if the high-rate charge is continued for much longer than 10 minutes, the battery could overheat and be damaged. Some battery chargers are equipped with a setting to give a

short high-voltage bump start for dead batteries. If your shop doesn't have a charger equipped with this feature, you should look into getting one.

For your information, if your charger has the ability, Maintenance Free batteries can be charged at a slightly higher rate (15v to 16v) than conventional batteries (about 14.5v).

So back to the original question, why the apparent increase in batteries that need replacing? We believe that one major cause is that the newer technology batteries are less tolerant than older style batteries of inadequate pre-delivery charging and heavy discharging during storage.

Regarding inadequate pre-delivery charging, there is a common misconception that the vehicle will charge a new battery to its full capacity. Not true! New batteries have only about an 80% charge when first serviced with acid and must be put on a charger for about 3-5 hours of charging at the normal 1/10 the rated ampere-hour capacity before being installed in the vehicle. If this is not



done and the battery is installed in the vehicle without a full charge, it will never be any better than the day it was installed in the vehicle. Even if the battery is removed and put on a charger at a later date, it will never reach its full potential. Obviously, a battery with reduced potential is more likely to fail than a fully charged one.

Regarding discharging during storage, newer style higher capacity batteries use thinner insulators between the positive and negative plates. When the battery sits in a discharged state, damage can occur to these insulators. Though newer technology batteries discharge in storage at a slower rate than older technology batteries, once discharged they are less likely to return to their full capacity.

Remember, batteries that become damaged as a result of improper storage are not covered by warranty. ♦

# Air Filters for Mule™ Torque Converters

by Gregg Thompson  
Product Support Supervisor

All the 1998 and later KAF620 Mule™ Utility Vehicles come with a new air filter in the inlet tract for the torque converter cover. As in previous years, these models draw air for the engine and the torque converter through the top rear tube of the cab frame. But in the past, air for the torque converter went unfiltered straight into the converter cover.

Filtration isn't actually needed in most applications because, at the top of the cab frame, the air is normally clean enough for the needs of the torque converter. However, in extremely dusty condi-

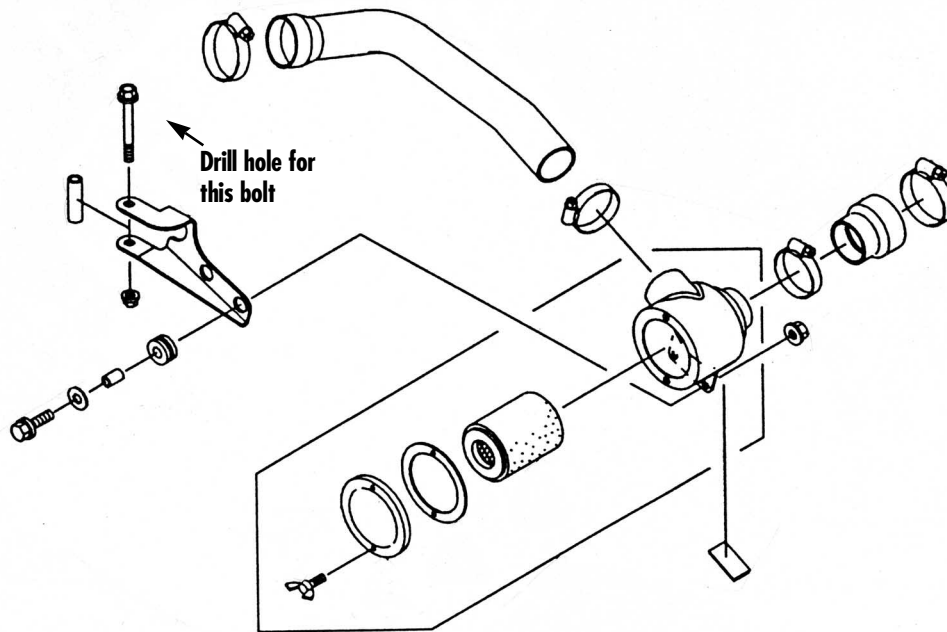
tions, large amounts of dust will reach the inlet and be drawn into the torque converter cover. Dirt is very hard on any moving part and the torque converters and belt are no exception.

This new torque converter air cleaner can be installed on older models (at the customer's expense) with just a very small modification. The air cleaner housing is

mounted to a frame tube using a steel bracket. One hole must be drilled through the frame tube to accept the mounting bolt. The filter assembly itself will serve as a template for drilling the hole. Simply assemble and install it and drill the hole where the bracket is. The filter and housing and all the parts needed to install it on an older KAF620 are now listed as Optional Parts on

the microfiche for the A1-A3, B1-B3 and C1-C3.

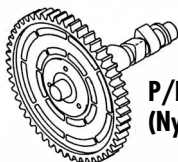
If you have customers using their pre-1998 2500 Series Mule UVs in dusty conditions, you should let them know about this new Torque Converter filter and recommend that they purchase one. Don't forget that once you've installed one of these on an older unit, that vehicle now has another maintenance item to remember. ♦



# KAF620 Camshafts

by Dave Behlings  
Parts Data Coordinator

As some of you may have noticed, there are now two camshafts listed on the microfiche for the KAF620 - A, B and C (2500 series Mule Utility

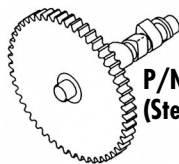


P/N 49118-2080  
(Nylon Gear)



P/N 59051-2340  
(Pinion)

Vehicles). The old-style camshaft (part number 49118-2080) has a nylon gear and is used in all vehicles up to the end of A4, B4, and C4 produc-



P/N 12044-2239  
(Steel Gear)



P/N 59051-2112  
(Pinion)

tion. The new KAF650 A5, B5, and C5 models will have the new camshaft (part number 12044-2239) which uses a steel gear.

The new camshaft with

the steel gear will fit in older engines but is not compatible with the old crankshaft pinion gear. The new camshaft must be used with the new pinion gear (part number 59051-2112) which must be pressed onto the crankshaft. The crankshaft must be removed from the engine to press the old gear off and a new one on. ♦

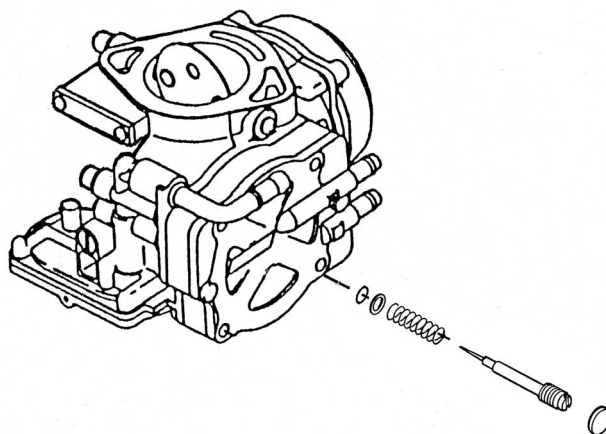


## CV Carburetors 1100 Watercraft

by Gregg Thompson  
Product Support Supervisor

The 1998 JT1100-B1 (STX) and JH1100-A3 (ZXi) are the first Kawasaki personal watercraft to come equipped with CV (Constant Velocity) style carburetors. These carburetors do not have the traditional (High and Low Speed) mixture screws that we are used to seeing on Jet Ski® Watercraft carburetors.

The lack of these adjustable mixture screws may be viewed as a bad thing by mechanics and customers who are accustomed to tinkering with



them to get the carburetors “just right” for conditions. But the truth is, with the exception of high altitude usage, these carburetors should not need any tinkering.

One of the benefits of CV carburetors is that they tend to compensate for conditions (temperature, humidity and modest altitude changes) automatically. Since the slide is raised by the pressure difference between the ambient air (in the engine

compartment) and the intake manifold, the slide movement is slowed just enough to prevent a lean bog but not enough for the operator to perceive any delay in response.

Unfortunately, we have had some early complaints of a throttle hesitation right off idle. These complaints typically come from customers who want

to stab the throttle from idle to wide open and have the engine respond instantly. We feel that if the throttle is opened just a little slower than “instantaneously” the vehicle will respond without hesitation. However, if you have a throttle hesitation complaint, we suggest you remove the pilot screw plug and clean the pilot passage and adjust the screw. If the problem persists, give the Technical Hotline a call.

If you have customers who regularly use their PWC at altitudes above 5000 ft, you might want to order and install these optional jets to gain the best possible performance up there:

### Pilot Jet

#32 P/N 16158-3723

### Main Jet

#160 P/N 92063-3722◆

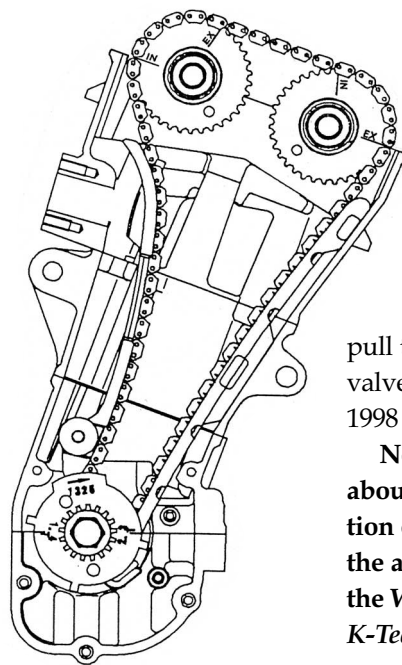
## ZX-9R Valve Adjustment

by Gregg Thompson  
Product Support Supervisor

The service manual for the 1998 ZX900-C1 says that in order to remove the camshafts you must first pull the engine. This means the engine would have to be removed to do a valve adjustment! That wouldn't make most customers very happy, would it?

The reason the service manual gives this procedure is because the timing marks for the cams are on the outside of the sprockets. The sprockets are so close to the frame that it is difficult to see the marks clearly. By just peering in between the frame and the engine, it is difficult to be certain the cams are timed correctly.

There is room, however, to slide a small mirror in there so the marks can be seen easily. Or while you have the cams out to



change the valve shims, you can scribe timing marks on the backside of the sprockets where they can be seen easily without a mirror. Please don't pull the engine to do a valve adjustment on a 1998 ZX-9R!

**Note:** For other tips about camshaft installation on this model, see the article on page 11 of the Winter 1997 issue of *K-Tech News*.◆

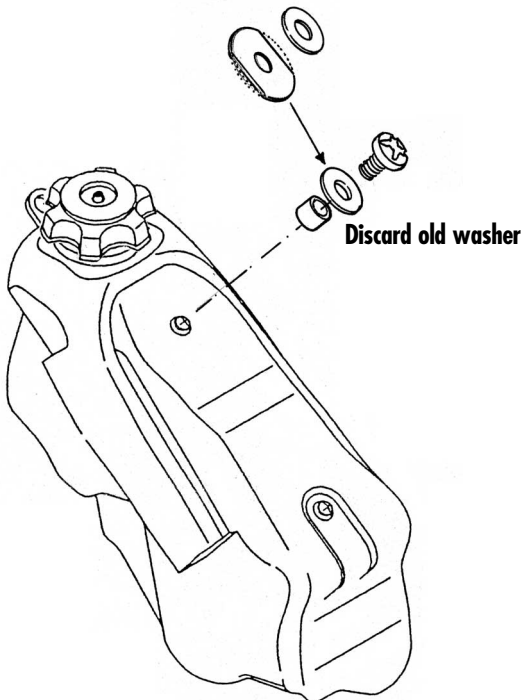
## Front Seat Mount Modification on KX125 and 250

by Gregg Thompson, Product Support Supervisor and Craig Martin, Technical Support Technician

We've run across some cases where expert riders on KX125s and 250s have had the seat pop loose at the front mount when jumping. Apparently

slot off the retaining washer. Of course, the seat stays in place because of the rear mounts, but being loose at the front can be something of a distraction to the rider.

If you know of someone who has experienced this problem or is a fast enough rider that you think he might experience it in the future, we have a suggestion. You can replace the retaining washer on the fuel tank with a larger (fender) washer that has been modified to fit the mounting slot in the seat base. Simply take a large washer that has a 6mm or 1/4 inch I.D. and grind



when sitting down on the take off of big jumps, the rider's weight hitting the seat can flex it enough to pull the front mounting

parallel flats on each side to produce a long narrow washer that is the same width as the original washer. ♦

## '98 JH/JT 1100 Hard Starting

by Gregg Thompson, Product Support Supervisor and Charles Yim, Product Quality Engineer

We have had some reports of 1998 JH1100-A3 and JT1100B1 Jet Ski® watercraft with hard starting problems. Of course, whenever hard starting is a problem, the first thing we suggest is to verify the engine condition by performing a compression test. A sharp engine should have 120-125psi. Even a new engine could have a compression problem so don't overlook this important check. Beyond that we do have some more specific suggestions that can help with the '98 1100s.

We inspected some carburetor sets from vehicles with starting problems and every one of them had improperly assembled choke valves. The choke valves were not centered properly in the throttle bore and would not close all the way.

The choke plate screws

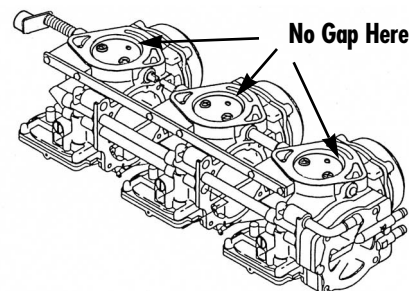
are installed and then staked at the factory, but they can be loosened enough to move the choke plates (about one turn). To do this, use a new #2 Philips screw driver (to avoid damaging the screws) and loosen the screws on all three choke plates just enough that you're able to move the plates. Close the choke all the way to center the plates in the carburetor bore and tighten all the choke plate screws while holding the choke closed tightly.

Because of play in the linkage, the choke plate farthest from the cable arm will not quite close tightly but this is acceptable.

Make sure the choke knob stays all the way out when you let go of it. Tighten the friction nut if needed.

Also, the pilot screws should be removed, the passages cleaned, and the screws reinstalled and adjusted approximately 1-3/4 turns out.

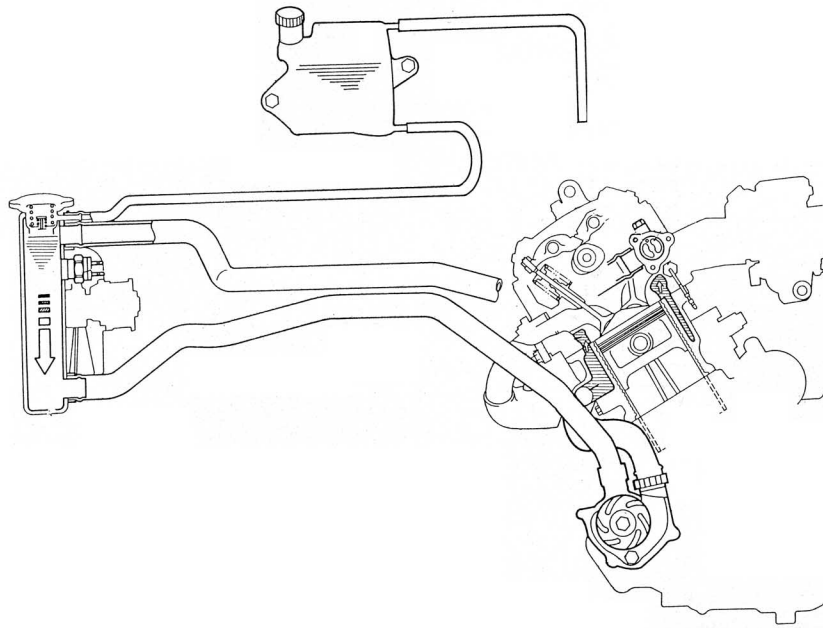
If stubborn hard starting persists, call the hotline. We have some other parts coming that can help. ♦



## Prairie® 400 Cooling System Air Bleeding

by Keith Pestotnik  
Senior Product Quality  
Engineer

Whenever servicing the cooling system on any model ('97-'99) KVF400, it is a good idea to elevate the front of the vehicle when adding coolant. The shapes of the radiator hoses are such that they tend to trap air. Simply opening the bleeder bolt on the cylinder head cannot bleed this air out. By raising the front of the vehicle about 10 inches, any air trapped in the hoses can flow into the radiator where it will be



replaced by the coolant you add. This procedure is particularly important when the system is being refilled after having been drained and during pre-delivery service of new

vehicles.

If enough air remains in the cooling system, overheating may result because the coolant level inside the radiator is lower than the fan switch located

just below the pressure cap. If the coolant level is below the switch, the switch cannot sense the coolant temperature and won't turn the fan on when needed. ♦

## Carbon Build-Up in Vulcan™ Engines

by Gregg Thompson,  
Product Support Supervisor  
and Steve Rice,  
Product Support Specialist

As with all big V-Twin motorcycle engines, our Vulcan™ 800 and 1500 models have lots of bottom-end torque. That torque along with a pleasant low RPM exhaust note, encourages the customer to lug the engine a little (or a lot). Besides, most Vulcan owners aren't in any big hurry to get where they're going

anyway.

As a result, many Vulcan engines don't see redline very often. Some never do. This riding style is pretty easy on the drivetrain and tires and such, but it does have one drawback—carbon build-up in the cylinders. Sometimes customers will begin experiencing problems from carbon in the engine at surprisingly low mileage.

The two most common symptoms of this are poor idling or low-speed power from carbon on the valves,

and an abnormal knocking noise from carbon build-up on the piston and combustion chamber. Also, depending on what gasoline the customer is using, detonation can result from excessive carbon in the combustion chambers.

Disassembling the engine to remedy this problem is a little too expensive to be doing every few thousand miles, especially considering it's not covered by warranty. However, there are some chemicals available in the

aftermarket which can reduce the amount of carbon in the combustion chambers. The Kawasaki Accessories department is currently testing a gasoline additive for this very purpose.

Keep your eyes open for this new product; and in the mean time, if you have a customer whose Vulcan motorcycle seems to be suffering from carbon build-up in the engine, call the Technical Hotline. We may be able to help. ♦



## Kawasaki ATVs

Cont'd from page 2

warning icon for coolant temperature. It also has new lightweight aluminum rims, rear hubs, rack support frames, and front skid plate. To keep the price down, the 2x4 model still comes with steel components and no speedometer.

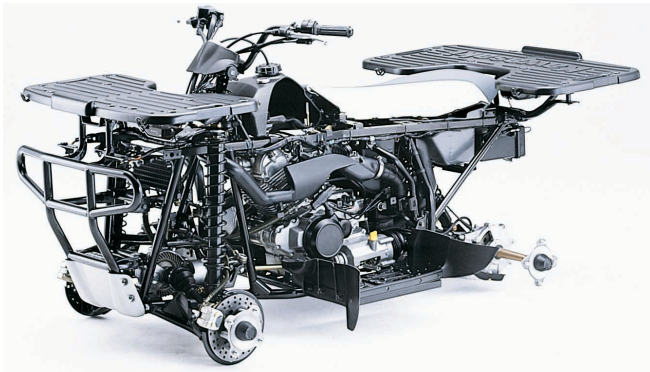
### Prairie 300 4x4 and Prairie 300

The new Prairie 300s shoot to the top of their class with a strong motor, sturdy and comfortable chassis and unmatched capabilities. They feature a version of the Bayou 300 motor that pumps out one-and-a-half more



**The rear brake drum seals better, is stronger, and has more protection to fight leaks.**

horsepower for an 8% increase. New engine cases hold a strengthened Bayou® crankshaft with a 3mm larger right-hand main journal (from 30mm to 33mm). The cylinder tilts forward an additional 5° (from 20° to 25°) to increase ground clear-



**This cutaway of the Prairie 300 4x4 shows the pumped up version of the Bayou 300 motor mated with KAPS on the Prairie 400 platform. Note the accessory plug near the handlebars and the new oil cooler.**

ance. New cam timing has longer duration and more lift to create the power gain. The '99 KAPS system has settings to match the 300's power delivery.

An oil cooler improves cooling ability and increases oil capacity from 2400cc to 3100cc. A spin-on cartridge-type oil filter is easy to replace. To increase airflow and aid cooling the front grille has no mesh screen. The grille also has pre-fabricated mounts so an accessory winch can be bolted right in.

A battery-powered DC-CDI ignition system improves low speed performance. A new regulator/rectifier boosts capacity to 30 amps (from 25 amps) to strengthen the charging system. An electric carburetor heater prevents icing in cold, damp conditions. Snorkel air intakes for the airbox

and CVT capture cleaner and drier air.

The 300s are fun to ride with new suspension settings taking advantage of the 300s' lighter weight. They also get the job done with a class-leading rack capacity of 242 pounds and towing capacity of 1100 pounds. The proven ergonomics, full-sized feel, and nimble handling make the new Prairie 300s the most comfortable, best-performing machines in their class. ♦



**The Prairie 400 4x4 digital meter includes a speedometer, odometer, twin trip meters, clock, hour meter, and even a warning icon for coolant temperature.**

## The Other '99 ATVs

### Bayou® 400

This model now features a dual element air filter just like the Prairie models with yellow "hairy" foam on the outside. Grease is now applied on both ends of the filter to keep dirt out. A new metal guard protects the rear propeller shaft boot. A new molded pin connector instead of bullet connectors allows easier accessory hookups.

### Bayou 300 and Bayou 300 4x4

These models also have the greased dual element air filter, rear propeller shaft boot protector, and molded pin accessory connector. They also feature a more durable 30 amp regulator/rectifier (from 25 amp) with waterproof connectors.

### Lakota™ 300

The Lakota receives the new 30 amp regulator/rectifier and molded pin accessory connector.

### Mojave™ 250

The Mojave, like the complete ATV lineup, gets a new front fender with a molded-in section for the ATV usage warning label.

### Bayou 220

This model also receives the new air filter and molded pin accessory connector. It received the propeller shaft boot protector during 1998.