

## BIG THINGS IN LITTLE PACKAGES

# KX65



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# The Y2KXs

by John Griffin  
Instructional  
Designer/Instructor

The all-new KX65 highlights the KX lineup for 2000 (or Y2K, if you will). The KX125 and KX250 return with a host of exciting improvements to the engine and chassis. The remaining green bikes return to the line-up with attractive new graphics.

## KX65

The KX65 is a new big brother to the KX60, which is still offered. The KX65 engine is based on the KX60 with changes that solidly boost power. The chassis is new from the ground up, with more travel, longer wheelbase, and disc brakes.

## Engine

The cylinder bore is 1.5mm larger for a dis-



**KX65**

placement of 64.7cc, from 60cc. This may not seem like much but, with an engine this small, it really adds power and broadens the powerband. The new cylinder has short studs securing it to the cases with separate studs securing the cylinder head. To handle the heat created by the additional horsepower, the cooling system has a larger radiator. A new water pump reduction gear reduces impeller shaft rpm for longer seal life.

Better airflow in and out of the engine results in more power. Air flows through a large airbox, air filter, and air boot to a Mikuni VM24SS carburetor that now has an air/fuel mixture screw. After combustion, air escapes through a more efficient center exhaust port which was made possible by moving the cylinder 12.5mm to the left on the cases and changing the frame to a split cradle type. The air exits through a "low boy" exhaust pipe and a removable, aluminum muffler.

Clutch action is improved with a clutch release arm that rides in needle bearings and new steel clutch plates. The clutch basket and hub use involute splines and are fastened with a circlip

instead of a bolt. Shifting is easier thanks to a shorter shift lever and a shift drum that rides on roller bearings.

## Chassis

The all-new chassis features a split cradle design and bottom link Uni-Trak system. A large box section steel swingarm has block style chain adjusters and connects to an aluminum, piggyback reservoir shock that is rebuildable and has a threaded preload adjuster.

The KX65 front end is more rigid with 33mm front forks (from 30mm) with more travel and a larger diameter front axle (from 10mm to 12mm). Tapered steering head bearings add precision and durability. The wheelbase is 3/4 inch longer than the KX60 and the steering angle is 1.5 degrees tighter at 26.5°. This bike goes where the rider points it, even at speed in the rough.

Lightweight and strong aluminum rims are laced to hubs with 180mm brake rotors front and back that can "stop on a dime." Other features include: clutch and brake controls, a removable left-side rear frame piece, and large 40mm wide cast steel footpegs with sturdy 10mm pivots.



**The new KX125 has a broader powerband and new front forks to handle those front wheel landings.**

## KX125 Engine

The 2000 KX125 is easier to ride fast with a broader powerband and more thrust. The cylinder ports have been lowered to add bottom and midrange power and the exhaust ports are wider to maintain good top-end. A new cylinder head lowers the compression ratio (from 8.2:1 to 7.9:1 high-speed compression) to let the engine rev quicker and higher. Revisions to the exhaust pipe, K-TRIC timing, ignition map, and a one-tooth larger rear sprocket complement these changes.

To improve engine response and make carburetion less finicky, the carburetor has a redesigned air inlet circuit, new jet nozzle and new jetting. A heavier flywheel helps the bike to hook up and go instantly. The clutch pull is lighter with better feel,

*Continued on pg. 12*

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**PISCATAWAY/  
GRAND RAPIDS****A \$10.00 "TOOL" THAT SHOULD BE IN YOUR TOOLBOX!**

Here is the scenario:

Your boss walks back to the service department with Joe Customer and asks you for the piston-to-cylinder clearance for Joe's motorcycle in inches because the person boring the cylinder does not have metric measuring instruments. You grab a calculator out of the top of your toolbox, take the metric specification and multiply it by 0.03937. Within thirty seconds, Joe Customer has his piston clearance in inches, and the boss and Joe think you are a genius. Reality: You bought a ten-dollar calculator and keep it with a conversion chart in your toolbox!

How about this one? You need to torque a nut to 3.5 kg-m but the only torque wrench you can find is in foot-pounds! No problem, grab your calculator and multiply 3.5 kg-m by 7.233 and you have the equivalent torque in foot-pounds. You saved yourself a half-hour of looking for the metric torque wrench.

Shop manuals do not

always give specifications in both English and metric terms. Sure, you can look through several references and probably find the equivalent specification, but a calculator with a conversion chart does it faster.

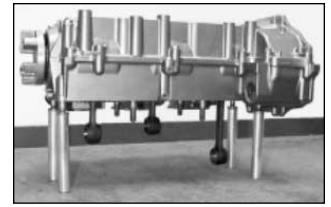
Most service manuals have a conversion table in the appendix. Kawasaki's Service Update seminar handbooks also contain a conversion chart. The calculator takes the drudgery out of doing the math.

Keep a calculator and conversion chart handy. It will save you time, and give the perception of technical genius every time you help a customer or fellow employee. Every good technician needs a calculator!

Fred DeHart  
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**ATLANTA/TULSA****MORE "EXTRA" SPECIAL TOOLS**

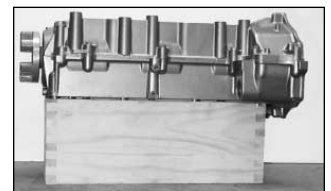
"Extra" special tools are tools you make yourself because no one manufactures them. Here are two variations of a tool to help assemble watercraft crankcases. To assemble crankcases, you must sup-

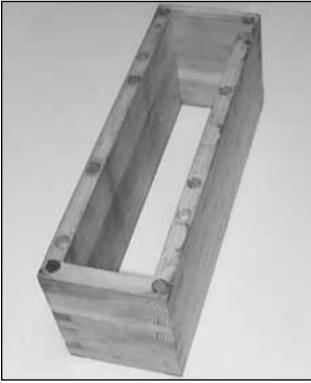


port the upper crankcase off the workbench so the connecting rods can hang down freely to avoid possible damage. If you have ever installed a crank in the upper case while balancing the whole assembly on shaky boards, you will appreciate either of these tools.

**Tool #1:** Simple metal dowels. Four dowels are threaded in one end so they can be fastened onto the 8mm cylinder base studs as extensions. I made the set pictured with 4 1/4" long sections of 5/8" tubing bonded to cylinder base acorn nuts with epoxy. This size fits nearly all Jet Ski® engines. Another option is to take 4 1/4" long sections of metal stock and drill and tap one end with 10mm x 1.25 threads.

**Tool #2:** A plain wood box. I use wood from a watercraft crate because the soft wood doesn't damage the crankcases. The boxes are 5" tall with holes drilled for the studs and locating dowels to



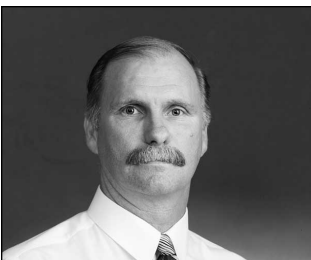


*Regional News - cont'd*

slide down into. Use a base gasket as a pattern for the size of the box and hole location. The case half should sit firmly on the box as you assemble the crankcases. I have a different size box for 750 twins, 900/1100 triples, and the 1200 triple.

I hope you try one of these tools. They make crankcase assembly much easier.

*Walter Rainwater  
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## IRVINE/TACOMA

### NEW TRAINING SEASON

It's time to start planning for next year's service training. Once again, last year's attendance was a record for K-Tech training, and we're expecting even more this year. With the introduction of some

very special products, training is even more important this year. This year there will be 2 one-day seminars: Service Update 2000 covering all the new models and some special items to kick off year 2000. The second seminar will cover the Kawasaki Jet Ski Watercraft Direct Injection system. You may attend one or both seminars.

The seminars will be in the same cities as last year, however we have already added a few new cities. Last year several locations ran into problems because so many people signed up very late. When we reserve a location for a seminar, we use the student number to book the room size, number of meals, and needed materials. The rooms have a maximum number of people they can hold; and, because of local codes, we cannot accept any more unless we get another room, which can be impossible on such short

notice.

Last year we could have had two seminars at some locations if we had an accurate attendance count. Please sign up as early as possible. Look for a Service Bulletin to be mailed in September listing the dates and locations. This year the seminars will start in mid-October.

The Kawasaki FICHT Jet Ski Watercraft Direct Injection class will cover the technical features and operation of Kawasaki's all-new watercraft featuring FICHT Fuel Injection. This class includes features of the new watercraft, component operation, circuit operation, and system troubleshooting using all-new diagnostic software. As an incentive to the dealership, all attendees will receive the diagnostic software and manual as part of the course. ♦

*Rob Taylor  
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## Congratulations!

**Ray Sumner from Millennium Cycleworks in Lilburn, Ga. and Gary Bustillos from Beaumont Kawasaki in Beaumont, Calif.**

**We have a tie for the Grand Award in the 1999 Kawasaki Service Contest. Remember, the Grand Award is earned by the person (or persons) with the highest cumulative score from all three quizzes of the Service Contest.**

**Ray and Gary are about as loyal to Kawasaki as two people could be and we sincerely appreciate their participation. Both gentlemen have competed in all three Service Contests (1993, 1995, and 1999). Gary was the Grand Award winner in the first contest.**

**Each award winner has selected a gift certificate for the items of his choice from the Kawasaki accessory catalog. Look for more information on award winners in the next issue. ♦**

## Tool Corner

### **The History of Flywheel Puller 57001-1405**

I receive many calls on this tool because of numerous part number and physical changes. It originated as the flywheel puller for the JH900-A1 as P/N 57001-1223, and was modified several times but retained the same part number. This caused confusion because the tool looked different, but operated the same. It was also used on the JH/JT1100's flywheel, and was slightly modified soon after, but still retained the same part number. In short, 57001-1223 was used on all 3-cylinder Jet Ski® engines.

In 1997 when the Prairie 400 came out, 57001-1223 was used to remove the flywheel, but the part number changed to 57001-1403 without any physical changes to the tool, and 57001-1223 was dropped. This caused confusion because the watercraft manuals still listed 57001-1223 as the flywheel puller with no reference to 57001-1403 as the new puller.

In 1998, we changed 57001-1403 to fit upcoming models and changed the part number to 57001-1405, which is the current number. Part number 57001-1405 works fine on the Prairie 400 (note: the Prairie 300 uses 57001-1191) but will no longer work properly on the 3-cylinder watercraft engines. Those engines require adapter 57001-1279 along with 57001-1405 to avoid damaging the end of the crankshaft. The adapter is not used with the older tools 57001-1223 or 57001-1403. ♦—*Rob Taylor, Supervisor, Curriculum Development*



Mule 520

## Mule™ Utility Vehicles for 2000

by John Griffin  
Instructional  
Designer/Instructor

Some good news for Mules in 2000 is the addition of a new Mule 520. This model is based on the Mule 550 but features different tires and a reduced top speed of 15 mph (from 20 mph). We featured the Mule 2510 Diesel in our last issue. That model is set to be released to dealers this September.

### Mule 520

The biggest difference between the Mule 520 and the Mule 550 are smaller, smooth, hard-surface tires. The smaller tires combine with a different engine governor spring to cut top speed by 5 mph. The change in governor speed lowers the maximum rpm to 3000 rpm (from 3600).

### Mule 550

The Mule 550 is now

even more durable with a new CVT belt and added reinforcement to the steering rack and pinion. The Mule 520 also features these additions.

### Mule 2500/ 2510 4x4/2520

Refinement is the name of the game for the new Mule 2500 series. These models received a reinforced rack and pinion. Also larger diameter rear drive shafts and pinions add strength and durability. The 2510 4x4 gets larger u-joints for the front propeller shaft.

Kawasaki also focused on small details. The hand shift lever is now larger and more rigid for easier shifting. New seals with an added dust lip protect the front wheel bearings for longer bearing life. The parking brake inner cable is covered with a liner to resist corrosion and wear. ♦

## 2000 ATVs

by John Griffin  
Instructional  
Designer/Instructor

The 2000 Kawasaki ATVs feature refinements to improve durability and comfort. The biggest news for all ATVs is the addition of a brake light. A switch on the front and rear brake levers activates the brake light(s). All the ATVs also get resistor spark plugs, a more durable parking brake lever and boot, and new gas caps with recessed vent tips to avoid impact damage.

The Bayous and the Lakota feature a more durable clutch material on their centrifugal clutch. The Prairie models use a new drive belt with cogs on both sides of the belt for added rigidity and improved wear resistance. The floorboards on the Prairies have new holes to



**The 2000 Bayou 300 4x4 may look like last year's model, but it has several refinements, including new shock absorbers front and back.**

increase traction for the rider's boots.

Here are models that received additional changes:

**Bayou® 220:** A redesigned front rack makes it easier to carry a load. New carburetor settings help stabilize the idle and improve response. The front brake drums are reinforced in the bearing area to reduce brake noise when hot.

**Bayou® 300 4x4:** New shocks front and rear have all-new damping and spring rates for a plusher ride. Compared to last year, the springs are slightly stiffer initially, then significantly softer in the middle and end of the stroke. The shocks have a lot less rebound damping with a tad more compression damping.

The plastic cover in front of the handlebar clamps is now made of nylon instead of ABS to add strength. A new left-hand switch case with start button is more resistant to wet and muddy conditions.

**Prairie 300® and Prairie 300 4x4:** The wiring connector for the electric carburetor heater has been moved to make servicing easier. ♦

# 2000 Super Sherpa and ZR-7

by John Griffin  
Instructional  
Designer/Instructor

The Super Sherpa and ZR-7 are new models just introduced to the U.S. market. They both are do-it-all machines with maximum "bang for the buck." They give their rider comfort and the ability to have fun wherever they go. They expand Kawasaki's lineup to meet the growing demand for motorcycles in our country.

## ZR-7

The ZR-7 follows on the success of the ZRX1100 with the power and handling to carve canyons and the comfort and reliability to handle daily commuting. If you add the optional hard bags, it's ready for sport touring. This bike resists

being fit into a category, but if you must, Kawasaki is calling it a Naked Street Bike.

It is powered by a pumped up, air-cooled 738cc engine with roots that tie it back to the fabled Z-1. It uses dual overhead cams with direct valve actuation and shim under-buckets. New wrinkles include the Kawasaki Throttle Responsive Ignition Control (K-TRIC) for exceptional throttle response and fuel economy, an oil cooler, and a stainless steel 4-into-1 exhaust system.

The chassis is ready and willing with stiff 41mm conventional forks up front and Uni-Trak in the rear. The rear shock offers 4-way rebound damping and 7-way preload. Wide and light three-spoke rims like the

ZX-6R/ 9R are wrapped with Z-rated Dunlop Sportmax II radial tires (120/70-ZR17 and 160/60-ZR17). Braking chores are handled by dual 300mm rotors up front and a single 240mm rotor in back. Dual-piston calipers are used all around.

The 445-pound ZR-7 is made even better with a bargain price of \$5,699. It offers a comfortable upright seating position, 5.8-gallon fuel tank for great range and full instrumentation with a fuel gauge. It has nice features like a center stand, adjustable hand levers, storage under the seat, and grease fittings for the rear suspension. This is a great bike at a great price.

## Super Sherpa

The Super Sherpa is sure to bring tons of smiles per mile. It has a torquey 250cc engine with the magic button, that is, electric start. This feature is invaluable, since inexperienced riders can start it at will and quick trips to the store are simple. The low, narrow seat and lightweight agility allow riders of all sizes to ride confidently and explore new ground. Long travel suspension gets you there with a plush ride, and



**ZR-7**

front and rear disc brakes offer a quick stop when you are ready.

The air-cooled, DOHC, 4-valve, single-cylinder engine is based on the successful KLX300R. It is protected with an aluminum skid plate and has an exhaust system made completely of lightweight stainless steel. A 6-speed transmission allows a gear for every situation, street or trail.

The chassis is ready for adventure with 36mm front forks providing 8.7 inches of travel. The Uni-Trak suspension in the rear features an aluminum swingarm and 7.3 inches of travel. Other nice features include a trick digital speedometer with large display, dual tripmeters, and clock. The choke knob is easy to reach mounted next to handlebar clamps. Gold anodized aluminum rims are a classy touch on a motorcycle retailing for only \$3,999. The Super Sherpa is a natural for training new riders so Kawasaki has made it part of our Rider Education Program. ♦



**Super Sherpa**

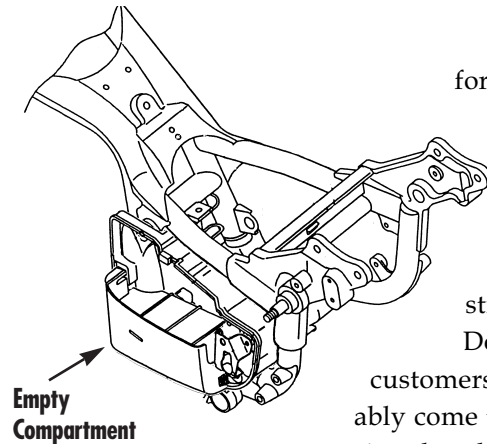
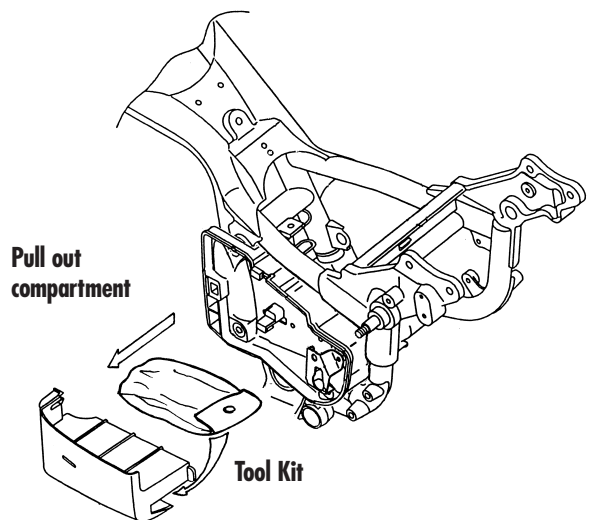
# Vulcan™ 1500 Drifter™ Tool Kit

by Gregg Thompson  
Product Support Supervisor

Have you ever tried to find the tool kit on a Vulcan 1500 Drifter? Some dealers and customers have had trouble finding it. For sure, the tool kit can be hard to find, but it is usually there.

To find it, you first remove the LH side cover, which is secured

by a keyed lock and three rubber dampers. Under the side cover is a compartment, which on 49-state models contains only a small strap, the kind of strap that normally holds the tool kit. On California models, this compartment holds the evaporative emissions charcoal canister, but on all other units, the compartment is empty except



for the strap. It looks like the tool kit should be right there, held by that strap.

Dealers and customers understandably come to the conclusion that the tool kit has

been left out by the factory. But in fact there is sort of a false bottom to that compartment with another compartment below it. By pulling out the bottom of the compartment, you will discover the tool kit hidden in the back of that lower compartment. ♦

## Carbon Clean Mixing Ratio

by Gregg Thompson  
Product Support Supervisor

As mentioned in the Summer 1998 issue of K-Tech News, the Kawasaki Accessories department has a new chemical product called Carbon Clean (P/N K61030-003). The purpose of this gasoline additive is to break up and remove carbon deposits from engine combustion chambers while the engine is running. Our big V-twin engines (both the 800s and 1500s) are particularly susceptible to developing heavy carbon deposits during slow speed use and often can benefit from this product.

Unfortunately, our initial shipments of this product came without mixing ratio instructions on the label. The optimum ratio for removing existing carbon from the combustion chamber is one bottle of Carbon Clean to 3 1/2 gallons of gas. However, the ratio is not critical. Any amount of this additive is helpful and it would take almost straight Carbon Clean in the gas tank (not a likely scenario) to cause a problem. Even then, the problem would most likely be that the engine simply would not start. Smaller amounts used more frequently can help prevent the build-up of carbon. ♦





# It Is Coming! MSDS CD

Soon you will receive a CD-ROM containing the Material Safety Data Sheets (MSDS) for the hazardous materials you receive from Kawasaki. Each chemical (or "material") has its own data sheet. The MSDS give vital details about hazardous chemicals such as: physical hazards (like potential for fire, explosion, and reactivity), health hazards, primary route(s) of entry, and emergency first aid procedures. Kawasaki currently supplies this on microfiche. Paper copies are available upon request.

The MSDS CD has several benefits. You will be able to print any MSDS page on demand. A CD takes up very little space. The information is easy to find with several ways to search for any material. Locate it by KMC part number, product type (adhesives/sealants, lubricants/oils, battery acid, etc.), or by the Manufacturer of the product (Bel-Ray, Motul, Loctite).

Keep this CD in an easily accessible place and let all employees know about it. There are federal and state-mandated regulations on MSDS in the workplace, so check the Occupational Safety & Health Administration (OSHA) regulation for your location. ♦—David Behlings

## KL650

### Transmission Info

by Gregg Thompson and  
Randy Davis

In our Winter 1997 issue of *K-Tech News*, we ran an article explaining some changes in the KL650 - A10 and later transmission that could result in trouble for you if you were working on an earlier (A1 - A9) model. At the time there was a new style output shaft that was not directly interchangeable with the earlier one. However, the part number for the older shaft could substitute to the newer one if the older one was backordered. For a while, the part number for the older style shaft was actually canceled, making it impossible to get. Recently that error was corrected and the old

Model	A1-A9		Early A-10 to Eng. 32217		Late A-10 (Eng. 32218 and later)	
Description	Part No.	Teeth	Part No.	Note	Part No.	Note
Shaft, Input	13127-1147	15t	13127-1147	15t	←	
2nd Gear, Input	13129-1518	17t	13260-1464	18t	←	
3rd Gear, Input	13129-1519	22t	13260-1466	6&6 dogs x 34mm	13260-1518**	5&6 dogs x 36mm
4th Gear, Input	13129-1520	22t	13260-1325	6 'holes'	13260-1519**	5 'holes'
5th Gear, Input	13129-1410	24t	13260-1326	24t	←	
Shaft, Output	13128-1175	with flange	13128-1203	no flange	←	
Collar	N/A		92143-1721*	replaces flange	←	
1st Gear, Output	13129-1838	34t	13260-1327	34t	←	
2nd Gear, Output	13129-1523	26t	13260-1465	26t	←	
3rd Gear, Output	13129-1524	26t	13260-1467	25t	←	
4th Gear, Output	13129-1525	21t	13260-1330	21t	13260-1520	
5th Gear, Output	13129-1575	19t	13260-1331	19t	←	
Sprocket	13144-1163	15t	13144-1253	15t	←	
Nut	No nut		92015-1963*			
Collar	92027-1800	Sprocket	←		←	
Lockplate	13183-1525		Not used		←	
Lock Tab	Not used		92200-1065	Sprocket nut lock	←	
Shift Fork Low Gear	13140-1023		←		←	
Shift Fork 2 & 3	13140-1024		←		←	
Shift Fork 4 & 5	13140-1025	34mm dia.	←		13140-1257**	37mm dia.

\*The late style output shaft, collar and sprocket nut can be used as a set in the earlier transmission, if necessary.  
\*\* These (late style) gears and shift fork must be used together as a set.

style shaft was made available again. However, there are other complications with ordering KL650 transmission parts that can result in confusion. All the information for ordering the correct parts

is on the fiche but you must be careful. Make sure you are ordering the parts for the correct model and, in the case of the KL650-A10, make sure you order the correct parts for the customer's

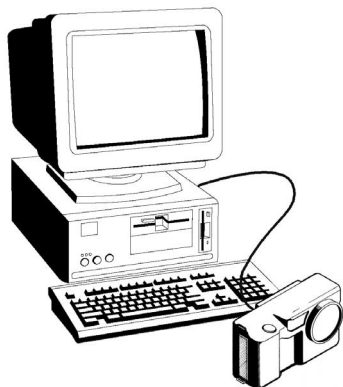
exact engine number. There were midyear changes that are not interchangeable.

For your convenience the above table shows the parts evolution for this transmission. ♦



# Digital Cameras and E-Mail

by Kenny Osberg  
Product Support Specialist



Does your dealership have a digital camera yet? Or does someone in your dealership have one? If so, you could really improve your communication with the Hotline by sending digital pictures by e-mail instead of prints through the mail.

As it is now, when we need to see pictures of some damage before authorizing a repair, a large percentage of dealers send Polaroid pictures. These are typically very poor quality and often don't show the damage at all. This is especially true of white Jet Ski® watercraft hulls. Many dealers will use either a disposable or inexpensive point-and-shoot 35mm camera with only slightly better results. A few dealers use a higher quality 35mm camera with a good close range lens, which produces significantly better pictures. But pictures from a digital camera usually show details even better than the average photos from a better-than-average 35mm camera.

But that doesn't take into account other factors involved.

Let's say the Polaroid and cheap 35mm cameras just aren't good enough (which is usually true). Here is a comparison of the whole process with a good 35mm camera vs. a digital camera.

### 35mm Camera:

- Find a roll of film or go to the store and buy one.
- Move the subject vehicle into proper lighting for pictures.
- Take the pictures.
- Take the film to have it developed (often wasting much of the roll).
- Go get pictures after developing (there goes your lunch break).
- If pictures aren't good enough, go back to step one (there goes your day).
- Package and send the pictures, once you've got good ones.
- Wait for pictures to arrive at KMC and the Hotline Tech to call you back.
- What a pain!

### Digital Camera

- Take pictures (digital cameras can compensate for almost any lighting conditions).
- Review pictures immediately (free processing!).
- Download (into an e-mail message) just the pictures you want to send.
- Send the e-mail and talk to the Hotline Tech the same day.
- Really fast!

With digital pictures, if you didn't get what the Hotline tech needed, it's easy to take and send more—no cost for film and processing and very little time spent. With the 35mm method, it's back to step one again!

There's no doubt the digital camera is a better way to go. You (or your boss) should consider getting one for your dealer-

ship, and then the next time a Hotline tech asks you for pictures, ask him for his e-mail address. We all have one. Of course you must have a PC with access to the Internet in order to send e-mail.

In addition to sending pictures for authorization (mostly in the case of watercraft hull repairs), e-mail pictures can be used to help explain anything you are having trouble describing over the phone. A picture is worth a bunch of words (I forget how many).

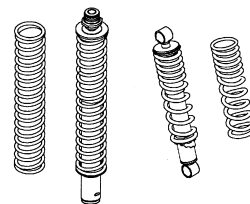
Your digital camera should come with some photo-editing software that will enable you to load your pictures into your PC. If you put your pictures in a JPEG file, it will be easy for us to receive and open them at this end. ♦

## Stiffer Prairie® Springs Available

SPRINGS	PART NUMBER	SUGG. RETAIL
<b>Rear Spring</b>	<b>92145-1199</b>	<b>\$96.95</b>
<b>Front Springs (2)</b>	<b>92145-1225</b>	<b>\$81.95 ea.</b>

by John Griffin  
Instructional Designer/Instructor

Kawasaki offers optional stiffer springs for the front and rear suspension of the 1999 and 2000 Prairie 300 and 400 models. These springs fit both the 2wd and 4wd models. If you have customers that bottom their suspension regularly or have a snow blade or other heavy accessories attached, sell them stiffer springs. They will improve rider comfort. The part numbers are also listed on the parts fiche and KIC. ♦



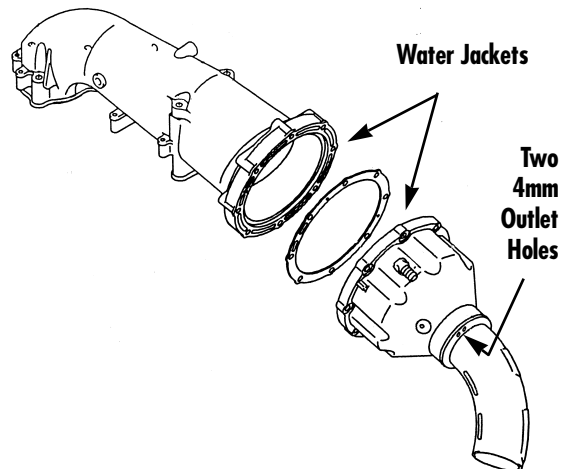
## Ultra 150 Overheated Water Mufflers

by Gregg Thompson  
Product Support Supervisor

We've had some calls on Ultra 150 watercraft with overheated water mufflers. What brings this condition to the customer's attention is that one or both of the large rubber hoses connected to the water muffler becomes melted. In every case, the cast aluminum part of the exhaust (the expansion chamber and exhaust manifold) as well as the engine had not overheated. What causes this condition is insufficient water flow from the exhaust chamber water jacket into the water muffler.

Cooling water travels from the cylinders around the exhaust port through the exhaust manifold into the water jackets of the cast aluminum expansion chamber. From there water goes two places. On the very top of the rear section of the expansion chamber there is a bypass outlet fitting. A hose from that fitting routes cooling water from the water jackets to the top of the jet pump cavity, where it exits the craft. Also, water exits the expansion chamber at the very end of the water jacket through two 4mm holes underneath the rubber hose that connects the expansion chamber to the water muffler. Insufficient water flow at these two small holes results in overheating of the water muffler and melting of the rubber hoses.

If you run into a JH1200-A1 with this condition, remove the exhaust system and disassemble it. Verify correct installation of all gaskets and check all the passages in the water jackets for any obstructions such as sand or pebbles. Pay particular attention to the two 4mm outlet holes at the rear of the expansion chamber. If you find pebbles in the water jackets, you know the customer has been starting off too close to shore or riding in water that is too shallow. Instruct the customer to avoid this practice. Remember that the more power a pump produces, the more suction it creates beneath the boat. The Ultra 150 produces lots of power and thus lots of suction to pull rocks and sand off the bottom. ♦



# Ultra 150 Hull Tune-Up Tips

by Keith Pestotnik  
Lead Engineer, Quality Assurance

The JH1200A1 Jet Ski® watercraft is a highly engineered, high performance watercraft. During its development, new frontiers in PWC design were explored to meet the high expectations of today's customers in this market segment. Standards were established for many important design settings and specifications. Then

variations were tested to learn what reasonable tolerances could be allowed while maintaining sufficient performance standards.

The Ultra 150, like all high performance vehicles, can benefit from reduced tolerance. If certain hull settings are adjusted to optimum design specs, handling may be improved, especially if some items ended up near the wide end of the tolerance during production.

Use these optimum settings to check these items which can be easily adjusted.

Remember, this is a mass production model with all of these items already confirmed to be within manufacturing tolerances. Fine tuning adjustments for the purpose of reaching optimum performance levels (like blue-printing an engine) must be done at the customer's expense, not warranty.

### ① Hull Mounting Plate Nut Torque

As described in the Spring '99 issue of *K-Tech News*, remember to check these three critical nuts often. They are located in the jet pump cavity just above the pump housing. The new specification is reduced to 15 ft-lb. from the old setting of 18 ft-lb.

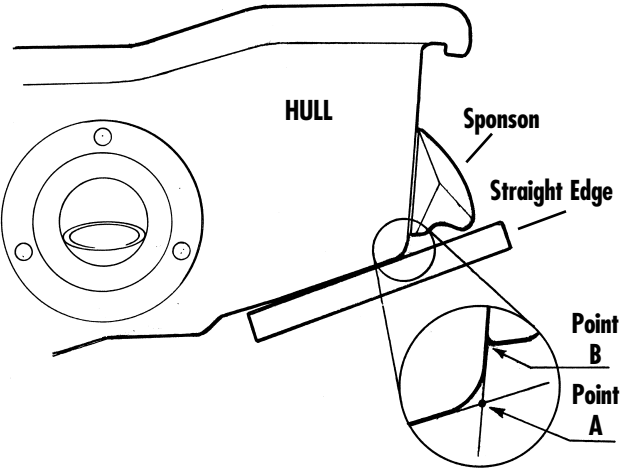
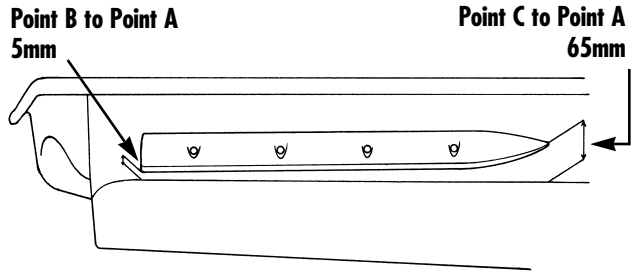
Loose hull plate mounting nuts may reduce hull rigidity and the usual crisp turn tracking and stability may suffer a little. →

Ultra 150 Hull Tune-Up Tips - cont'd

② Sponson Adjustment

Technically, the Ultra 150 sponsons are not adjustable. But actually there is usually enough clearance at their mounts to move them just enough to get them to these optimum settings. Loosen the four mounting bolts and adjust the sponson to the specifications shown in the diagrams.

To find point A, hold a small straight edge against the outer portion of the hull bottom and another straight edge or measuring device along the side of the hull. Where those two lines intersect is point A. Point A can be found anywhere along the bottom outer edge of the hull. Point B is the rear lower corner of the sponson and Point C is the front point of the sponson at the mold parting line.



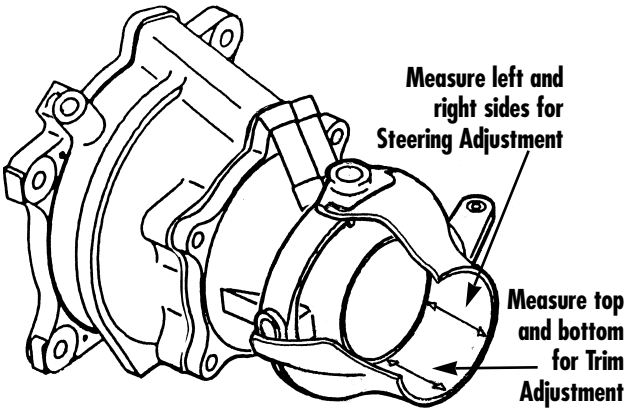
Sponsons adjusted outside tolerance limits may cause a little stern rolling during high-speed turns, or a vague feeling in the steering when running straight on smooth water.

③ Trim Nozzle Adjustment

Turn on the key switch, briefly touch the start button, then run the trim switch up until you hear its motor stop. That's the level trim position or where the trim nozzle should be set to level.

Measure the distance from the rearward edge of the steering nozzle to the rearward edge of the thrust nozzle at the top and bottom of the nozzle (12 o'clock and 6 o'clock positions) as shown. Do not lift up on the nozzle when measuring it. The top and bottom measurements should be equal. Adjust it by turning the trim cable end as required.

An improperly adjusted nozzle may cause a little high-speed bouncing and reduced top speed.



④ Steering Nozzle Adjustment

Sit on the craft and set the handlebars as straight as you can by eye. Then measure the steering nozzle the same as in the trim adjustment (described above), but this time on the left and right sides of the nozzle (3 o'clock and 9 o'clock). Be careful you don't move the nozzle when you measure it.

Adjust the nozzle by turning the steering cable end as required.

By the way, due to the thrust flow pattern of the pump, it is normal for the handlebars to be very slightly offset to the right at low speeds, and then more noticeably to the left at high speed. If you try to compensate for this by adjusting the nozzle other than described here, the bars will be excessively offset at one speed range. ♦

## The Y2KXs -Cont'd

thanks to a clutch release arm with better leverage.

### KX250 Engine

The 2000 KX250 engine features new cylinder porting and KIPS changes to mate last year's strong mid-and top-end power with the awesome low-end of the '98 model. Slightly smaller main and sub-exhaust ports boost low-end and midrange power. The sub-exhaust ports are closer to the main exhaust port to increase flow.

A new KIPS governor ball bearing cup and stiffer, double KIPS governor springs eliminate valve fluttering. The KIPS now opens from 6000 to 6500 rpm, instead of 5500 to 7000 rpm. To keep power delivery smooth, the sub-port KIPS valves open 500 rpm after the



**The 2000 KX250 is ready to assume its place as reigning 250 of the year.**

center valve through a spring-loaded arm that allows the timing variance and cushions the mechanism. Larger KIPS governor bearings increase durability.

Engine durability is improved with a new connecting rod that is hardened at both ends and has a 2mm larger big-end diameter to dissipate heat. Crankcase oil passages to the main bearings grew from 5mm to 8mm for better lubrication.

Several changes make engine response even better. A new air guide wing in the reed block improves midrange response. The carburetor gets the same changes as the KX125. The power jet system now closes from 6000 to 7000 rpm to lean out the midrange and (like the '99) from 8100 to 11,000 rpm for overrev capability. New K-TRIC settings and an ignition timing map with more advance add power and allow freer overrev.

Shifting is easier and more positive with a new ratchet lever and gear change mechanism (or "shift star") on the end of the shift drum. The shift star has separate polished pins and an outer cover instead of cast-in-place pins with no cover. The input third gear has narrower engagement dogs to engage quicker and

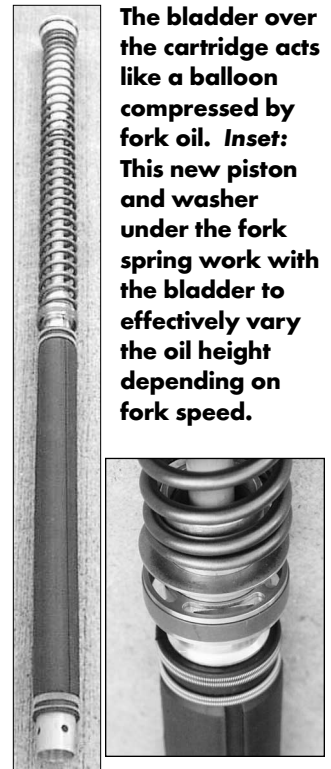
easier, which is critical since the shift from second to third is the one used most often when drag racing out of corners.

### KX125 and KX250 Chassis

New bladder-type forks suck up impacts and highlight the chassis with technology right from the works bikes. The bladder acts as a second air chamber, in addition to the one between the oil and fork cap.

A new oil piston added to the top of the cartridge assembly works in conjunction with the bladder. It has large oil orifices covered by a washer that sits under the fork spring. At low fork speeds, oil bleeds by the washer to effectively use both air chambers (similar to a low fork oil level) for smooth action. During high-speed fork action, the oil can't get past the washer fast enough and the bladder becomes the only air chamber used (similar to a very high oil level) for great bottoming resistance.

Fork stiction is reduced with new outer tubes that are more highly polished inside. Front wheel travel was reduced 5mm to increase fork overlap for



**The bladder over the cartridge acts like a balloon compressed by fork oil. Inset: This new piston and washer under the fork spring work with the bladder to effectively vary the oil height depending on fork speed.**

smoother action. Stiffer, straight rate springs hold the front end higher in the travel and, to compensate, the rear shock has more low-speed compression damping.

The KX125 and KX250 also feature detail changes like seat brackets held by bolts instead of rivets, an easier-to-adjust front brake lever, better seals on the rear brake lever and caliper, and handlebars that are flatter with less sweep.

The green bikes for 2000 offer something for everyone from big to small. It should be another banner year for riders in Green. ♦

FORK SPRING RATES	1999	2000
<b>KX125</b>	<b>0.39~0.41Kg/mm</b>	<b>0.41Kg/mm</b>
<b>KX250</b>	<b>0.42~0.43Kg/mm</b>	<b>0.43Kg/mm</b>