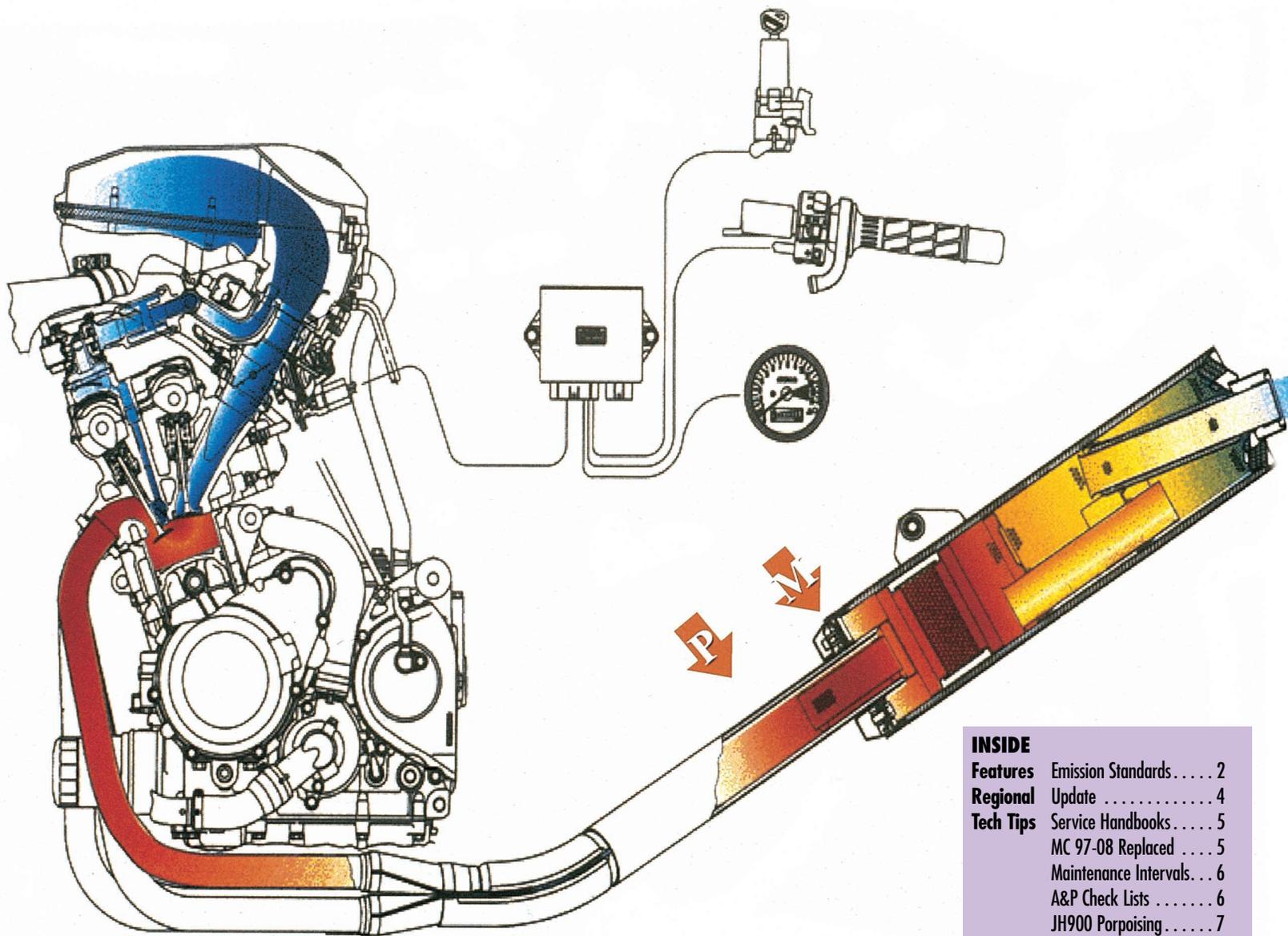


THE NEW EMISSION STANDARDS



INSIDE	
Features	Emission Standards 2
Regional	Update 4
Tech Tips	Service Handbooks 5
	MC 97-08 Replaced 5
	Maintenance Intervals . . . 6
	A&P Check Lists 6
	JH900 Porpoising 7
	High Altitude Specs 7
	Watercraft Tuner's Tip . . . 7
	Product Support 8
	KL650-A10 Transmission . 8
	Electrical Components . . . 9
	KX Suspension 9
	Key Cutting 10
	VN1500 Exhaust Valve . 10
	ZX-9R Information 11

New Emission Standards: Here's How They Affect You

by John Griffin
Instructional
Designer/Instructor

In 1998, new emission regulations affect all of Kawasaki's product lines. This article walks you through new emission standards and product developments for personal watercraft (PWC), ATVs, Mules, off-road and street motorcycles. Many of the new changes affect the complete United States. If you think "smog equipment" just affects Californians, think again.

Personal Watercraft

By the year 2006, PWCs must emit nearly 80% less emissions than they did in 1990. New technology will be required to meet this stringent level. The Environmental Protection Agency (EPA) and PWC manufacturers cooperated to establish a plan to reach this level with the least economic impact to manufacturers and consumers.

The first part of the plan is a gradual yearly reduction in emissions from 1999 to 2006. Secondly, the emissions from every unit a manufacturer sells within a model year will be

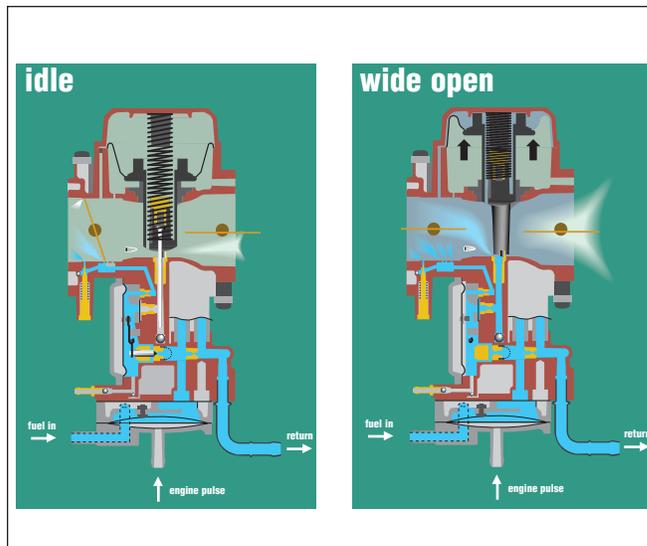
grouped together to form a corporate average. This means a manufacturer could sell old technology craft as long as they sold enough "clean" burning craft to offset the difference. Corporate averaging is currently used in the motorcycle and automobile industries.

Manufacturers attaining a corporate average cleaner than the standard set for that model year will earn emission credits. These credits will be placed into a "bank" account. For example, Kawasaki is earning emission credits on our '98 1100 STX and 1100 ZXi because they are already

certified to meet 1999 standards. We are the only manufacturer to do this.

Emission credits can be saved, traded, or even sold between manufacturers and industries. Let's say Kawasaki, for some reason, didn't meet the corporate average standard for 1999. We could use our 1998 credits from the "bank" to help offset the difference.

It is possible that one manufacturer could buy credits from a competitor to avoid an EPA fine for a corporate average worse than the standard. The most likely scenario is companies keeping their credits from one year to



Keihin constant velocity carburetors on the 1100 ZXi and 1100 STX dramatically reduce emissions, improve throttle response, and reduce fuel consumption.

K-TECH News

Vol. 10, No. 4
Winter 1997

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/Seattle
Robert Taylor

Contributors
Craig Martin, Ray St. John,
Carlos Johnston, Randy Davis

Graphics/Production

Graphic Art
Gregg Thompson

Photography
Dave Corey

Production
Holland Marketing Services

©1997 Kawasaki Motors Corp.,
U.S.A.

All rights reserved.
Published by Kawasaki
All suggestions become the property of KMC.
Sending a service suggestion gives Kawasaki
permission to publish and/or use it
without further consideration.

Specifications subject to change without notice.

Emission Standards - cont'd

the next to balance the flow of new "clean" models replacing older models.

In 1998, a non-mandatory emission standard has been set at 278 grams per kilowatt per hour of hydrocarbons (HC) added with nitrogen oxides (NOx). This can be written as 278 g/kWhr HC+NOx. The emission standard for 1999, the first year of regulation, is 253 g/kWhr. The eventual level allowed in 2006 is 81 g/kWhr. Our '98 1100cc engine family is certified to produce 140 g/kWhr.

New technology is required to get to 81 g/kWhr. Three technologies appear to be able to reach this standard. Direct injection two-stroke engines can meet the standard by specially sealing the engine, then using electronic fuel injectors to provide fuel in the combustion chamber. OMC, Mercury, and Bimota currently have systems in use like this. Another possibility is a two-stroke with a catalyst in the exhaust system. Finally, a four-stroke motor can meet the standard. It is too early to say what each manufacturer is going to do, but keep your eyes open.

What does this mean to you? In 1998, you have constant velocity (CV) carburetors on the 1100 STX and 1100 ZXi. These



In 1998, Kawasaki offers California model ATVs and KLX300Rs like this Bayou® 220. Carburetor jetting is changed and crankcase vapors are now vented to this airbox.

Keihin carburetors use vacuum created by the motor to raise and lower a slide just like a street bike carburetor. Fuel is only drawn into the motor when it turns enough rpm to burn efficiently, regardless of throttle position. These carbs are still pumper type, however, to handle the special fuel demands of two-stroke watercraft. The benefits are much improved throttle response, better fuel mileage, and less emissions.

In the next few years, you will see clean-burning, new technology watercraft replacing our existing line-up. It will be exciting to see new engines and a challenge to learn new service and troubleshooting procedures. Technical training classes will be more critical than ever for PWC technicians.

California Air Resources Board

The California Air Resources Board (CARB) began regulating the emissions of automobiles in 1965 to reduce the drastic smog problem. The federal government, through the EPA, didn't start automobile emission regulations until 1972. California is the only state allowed by the federal government to establish regulations separate from the EPA.

In 1998, ATVs, off-road motorcycles, and Mule utility vehicles sold in California must meet emission levels established by CARB. A "closed-course competition" category has been created for units not certified to meet the standard. These units can only be used in limited riding areas. We will go into greater detail about this in the next issue.

Kawasaki now offers

California model ATVs and KLX300Rs. For 1998, all Mules are certified to meet CARB standards; there are no "49-state" models. The emission standard for models with engines bigger than 225cc is slightly less than 9 g/kWhr HC+NOx or using another test procedure based on emissions per distance (like motorcycles or cars) 1.2 grams of hydrocarbons per kilometer (g/km). Mule emission-related components are warranted for two years. ATVs and off-road motorcycles have no emission warranty.

To meet these standards, Kawasaki altered the jetting and now vent crankcase vapors into the airbox. On some models, valve cover vapors are also routed to the airbox. Vapors in the airbox are reburned in the combustion process. Street bikes have used this design for years.

Street Motorcycles

Emission levels for street motorcycles have not changed in 1998, but Kawasaki introduced new technology to meet existing standards while producing even more power. The current EPA standard for street motorcycles is 2.5 g/km HC. The CARB standard for street motorcycles under 700cc is 1.0

Continued on page 12



PISCATAWAY/GRAND RAPIDS

A few months ago, I had occasion to tear down an engine that had obviously been assembled with the use of a large air wrench. The clutch wouldn't disengage properly because the clutch nut had been over-tightened to the point of distorting the bearing spacer behind the clutch hub. Most of the larger bolts and nuts on the motor were rounded off, and could not be loosened. The disassembly job took four hours longer than it should have! I also needed to replace lots of rounded off nuts and bolts.

Air ratchets and other air tools can be great time-savers when used properly, and in some applications are indispensable. On the other hand, misuse of air tools will cost time, money and your reputation as a good mechanic.

I consider air wrenches to be primarily disassembly tools, and even during disassembly they should be used with caution. Too much force combined with a poor quality or worn socket can result in rounded nuts and bolts. If used

again, not only are these nuts and bolts an eyesore, there is also the possibility that because of the rounded corners, they cannot be removed again.

On assembly, hardware should not be tightened with an air wrench. Too much force and you can break or stress bolts, pull threads from expensive aluminum parts, distort spacers and bearings and cause cosmetic damage. Most fasteners require a specific torque. So check the service manual and torque them to specification *by hand*. And the service manuals will also tell you that some hardware such as connecting rod bolts and clutch hub nuts cannot be reused. So *read your service manual* and look for this kind of information. During assembly, starting your hardware with an air wrench is not advisable. It's easy to cross-thread aluminum parts doing this.

Here are some general rules for using air tools that can save time and earn you money.

Always use the proper size air tool for the job.

Set the tool to the lowest possible setting that will accomplish the job.

If a locking agent was used on any of the fasteners, heat up the part to loosen the locking agent before using an air tool.

Use the proper (six

point) impact sockets for a good grip. Do not use worn sockets that fit the hardware loosely.

Do not tighten hardware with an air wrench. Hand-tighten all hardware and use a torque wrench when applicable.

Always use proper safety equipment. ♦

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



ATLANTA/DALLAS

Effective sales strategies can increase a dealership's success.

Hattiesburg Kawasaki is the Ichiban Dealer for ATVs in the East Region—Larry Myatt (the owner) has been a Kawasaki dealer for 12 years. Below he shares his guidelines for selling Kawasaki ATVs:

- 1) **Availability of the product:** *Units are delivered by Kawasaki on a timely basis. This allows the dealer to plan ahead and advertise the product.*
- 2) **Kawasaki sales programs:** *Financing programs through HRSI have been a big reason for selling*

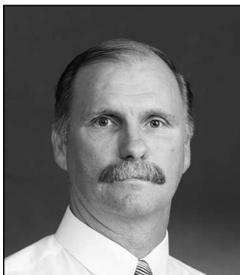
Kawasakis. Retail bonuses from Kawasaki for reaching sales goals is always a good reason for selling Kawasakis.

- 3) **Salesmen knowledge:** *Explaining the features and believing in the product goes a long way in selling. If the salesman knows the product and can explain the benefits, he can sell the unit.*
- 4) **Demo rides:** *Usually if you can get the customer to ride the unit, you can close the deal. We keep units available to ride and encourage the customer to take a test ride.*
- 5) **F&I:** *If the customer is still a little hesitant about the buy, but you can get him to sit down to discuss financing and show him how easy and fast he can get the ATV, he usually leaves with the unit.*
- 6) **Advertising:** *We cover about a 100-mile radius with our advertising. We want people to know about Hattiesburg Kawasaki, where we are, what we sell and how much it costs. Radio, TV, and newspaper are our main sources. We believe in advertising and we spend a lot of money doing it.*
- 7) **Service:** *We have five full-time mechanics and our customers know they can get service from factory-trained mechanics on what they buy. This is a top priority for the consumer.*
- 8) **Reputation:** *We have built the reputation over the years that we appreciate the busi-*

ness and the customer will get the best possible deal he can. We like selling motorcycles, ATVs and Jet Ski® watercraft and plan on being here a long time.

By following these ideas, you can increase success at your dealership. Congratulations to Larry and Hattiesburg Kawasaki. ♦

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



IRVINE/SEATTLE

We are busy here at the Irvine training center with the training season in full swing. Not only do we have training going on, we are also on the road with our annual Product Update and new KIC (Kawasaki Information Center) seminars. Attendance has been very good, especially in the mid-West Region. Questions from the technicians in the Update seminars have been helpful in resolving technical problems at the dealership level. It's always amazing how different the problems are from region to

region. Denver might have a particular problem that the dealers in Salt Lake City or Seattle/Tacoma have never encountered. Not only do these problems we discuss in the seminars help us at the manufacturer level, it also allows us to talk to technicians in the following classes just in case they run into the same problems. Because of the limited area where a problem might exist, we might not be able to help correct it on the spot, but we can research and solve it when we get back to the office.

The KIC seminar was also well attended. Our new full-feature EPC (electronic parts catalog), KIC, is quite a package. Being part of the K-SHARE program makes it even more diverse. With instruction on basic Windows 95 procedures and the features of K-SHARE and KIC, we were able to help new or experienced dealership personnel. KIC will be evolving over the next couple of years with new features and benefits to become the industry leader in EPCs. Look for new seminars in the upcoming year. ♦

Rob Taylor
9950 Jeronimo Road
Irvine, CA 92618
(714) 770-0400

New Service Specifications Handbooks Available

by Ray St. John
Supervisor, Technical Writing

The Service Specifications Handbooks are a terrific resource for the working technician. The books list the most needed and most frequently used specifications for working on motorcycles, ATVs, and JET SKI® watercraft. The motorcycle and ATV book for 1996/1997 is part number 99926-1028-01. The watercraft book covering the last two years is part number 99926-1029-01. Order these books from your Kawasaki Parts Distribution Center just like any other part number. Please check the Parts Retail Price Guide (part number 99995-400-02) for the latest dealer cost.

In years past, the Service Spec Handbooks

Service Specifications Handbooks for Motorcycle and ATVs	
Years Covered	Part Number
'96-'97	99926-1028-01
'94-'95	99926-1026-01
'93-'94	99926-1024-01
'92-'93	99926-1022-01
'91-'92	99926-1020-01
'90-'91	99926-1018-01
'89-'90	99926-1016-01
'88-'89	99926-1014-01
'87-'88	99926-1012-01
'86-'87	99926-1011-01
'85-'86	99926-1010-01
'84-'85	99926-1009-01
'83-'84	99926-1008-01
'82-'83	99926-1007-01
'81-'82	99926-1006-01
'75-'77	99926-1001-01
'73-'74	99997-753

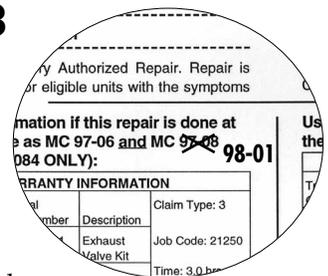
Service Specifications Handbooks for JET SKI Watercraft	
Years Covered	Part Number
'96-'97	99926-1029-01
'94-'95	99926-1027-01
'93-'94	99926-1025-01
'92-'93	99926-1023-01
'91-'92	99926-1021-01
'90-'91	99926-1019-01
'89-'90	99926-1017-01
'74-'88	99926-1013-01

were produced every year, and covered two years. The result was that each book overlapped the one before it and the one after it. To cut costs and save paper, Kawasaki has decided to produce the books every other year, and continue to cover two model years in each one, eliminating the overlaps.

Many older Service Specifications Handbooks are still available. ♦

Notice: MC 97-08 Replaced

The "Warranty Information" section of Motorcycle Service Bulletin MC 97-07 refers to MC 97-08 when you are doing both of those repairs at the same time. But MC 97-08 has been deleted and replaced by MC 98-01. Please make a note in your copy of MC 97-07. Thanks. ♦—Ray St. John



New Maintenance Intervals

by Carlos Johnston
Service Support Coordinator,
Latin America

As most of you know, for many years now Kawasaki has called for the first service on motorcycles to be at 500 miles, the second one at 3,000 miles and then at 3,000-mile intervals from then on. Before 1985, the valve clearances were to be checked at every service. Since 1985 the rules were relaxed a little and valves were scheduled to be adjusted on the second service and then at every other service (6000 miles).

Other manufacturers start with their first service interval at 600 miles and then slightly higher miles between services than Kawasaki. This may cause some confusion with new customers that

may have owned other brands in the past and even with your service personnel if you sell other brands. Beginning this year and starting with the "All New" models for '98, Kawasaki will be changing over to service intervals similar to other manufacturers. This is being done to conform to "industry standards" and to reduce the impact on the customer of increasingly expensive services.

The new service intervals are at 600; 4,000; 7,500; 12,000; 15,000; 20,000 and 24,000 miles with the first valve adjustment and carburetor synchronization at the third service (7,500 mi.). This means the customer has four required services in the first 12,000 miles including only one valve adjustment and carb

synch. The old maintenance schedule required five services in the first 12,000 miles including 2 valve adjustments and carb synchs.

So before you give a quote for a tune and service, make sure you check either the correct Service Manual for that model or the customer's Owners Manual to know what kind of work is recommended and when.

Once the work is done be sure to record it in the maintenance record page of the customer's Owners Manual. This will give you an opportunity to remind the customer when his next service is recommended. This helps the customer keep track of work done and encourages him to bring the vehicle in for continued service work. ♦

A&P Check Lists Now in Crates

by Ray St. John
Supervisor, Technical Writing



You've probably already seen it: an Assembly and Preparation Check List included with the other printed materials in the crate with a new unit. Starting in October 1997, Kawasaki started to put an A&P Check List into every crate with new units, for your convenience and to help ensure that the check list gets used every time a unit is set up and sold.

Of course, using the A&P Check List every time you deliver a new unit to a retail customer is part of your dealer sales and service agreement, but it goes beyond that. The A&P process may involve several employees in different parts of the store. The check list helps track what's been done and what still needs to be done for a new unit. Your customers know they are getting a unit properly set up and ready to go, when they see the check list. Signing the check list gives you a record that the unit was received by the retail customer in good condition and ready to Let the Good Times Roll. ♦

1-8 GENERAL INFORMATION

Periodic Maintenance Chart

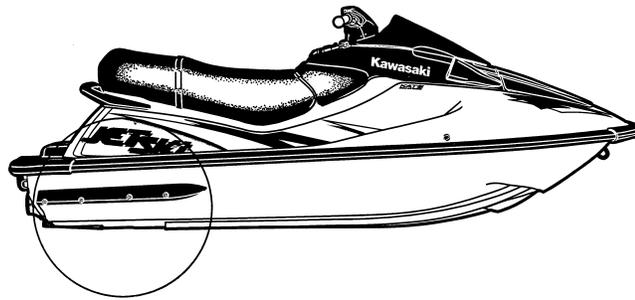
The scheduled maintenance must be done in accordance with this chart to keep the motorcycle in good running condition. **The initial maintenance is vitally important and must not be neglected.**

OPERATION	FREQUENCY	Whichever comes first	*ODOMETER READING								
			Every	1,000 km (600 mi.)	4,000 km (2,500 mi.)	7,500 km (4,660 mi.)	12,000 km (7,500 mi.)	15,000 km (9,300 mi.)	20,000 km (12,500 mi.)	24,000 km (15,000 mi.)	
Spark plug - clean and gap †				•	•	•	•	•	•	•	•
Valve clearance - check †					•		•		•		•
Air suction valve - check †				•		•		•		•	
Air cleaner element and air vent filter - clean#				•		•		•		•	
Throttle grip play - check †			•		•		•		•		•
Idle speed - check †			•		•		•		•		•
Carburetor synchronization - check †					•		•		•		•
Engine oil - change #	6 months		•	•	•	•	•	•	•	•	•
Oil filter - replace			•		•		•		•		•
Evaporative emission control system (CA) -check †			•	•	•	•	•	•	•	•	•
Drive chain wear - check † #				•	•	•	•	•	•	•	•
Brake pad wear - check † #				•	•	•	•	•	•	•	•

Adding Sponsons for a Smoother Ride: JH900 Porpoising

by Don Church
Manager, Service Training and Communications

All personal watercraft porpoise to some extent. Excessive porpoising seems to affect some personal watercraft and not others. Differing water conditions, usage styles, and rider perceptions also change the way each boat is affected. If you have a customer complaint



involving excessive porpoising on a JH900, you may want to consider changing the sponsons.

Just in case you haven't realized this important piece of information, sponsons on personal watercraft have a significant effect on a boat's handling characteristics. Sponsons affect turning "bite," tracking, and that "rhythmic rising and falling of the bow" otherwise known as porpoising.

And to my knowledge there is no magic formula

for establishing a sponson's optimum shape, length, or mounting position (fore/aft placement as well as angle). It takes hours upon hours of testing to determine the best all-around sponson for a particular boat.

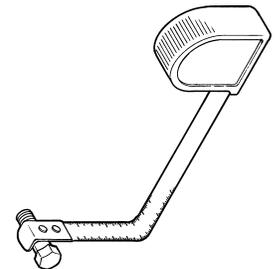
So, don't be surprised when I offer this little hint (which is not warranty authorization): The 1997 and 1998 model JH1100-A2/A3 sponsons can be installed on any JH900 to reduce porpoising. The 1997 model sponsons are red: 59437-3711-6L (left),

and 59437-3712-6L (right). The 1998 model sponsons are black: 59437-3711-6Z (left), and 59437-3712-6Z (right).

They may not eliminate all signs of porpoising, but they will function to dampen the boat's tendency to porpoise. The steering will also become crisper without negatively affecting other characteristics of the boat. ♦

Watercraft Tuner's Tip

by John Griffin
Instructional Designer/Instructor



I recently dropped a small bolt into the hull of a watercraft. After attempting to recover it with my hands, screwdrivers, and compressed air, I found a solution. I took a tape measure, extended it about two feet, then bent it in half at a 90° angle and used it to retrieve the bolt that was tucked well under the engine bed. The tape measure works great because it is flexible and you can alter the length instantly. ♦

High-Altitude Specs

In case you can make use of them, here are some recommended high-altitude settings for our '98 KDX and KLX motorcycles. These recommendations are for 6000ft and above. Enjoy!—Ed. ♦

Kawasaki High Altitude Jetting Specifications

KDX and KLX Models

JETS	KDX 200	KDX 220	KLX 300
MAIN	158	142	STOCK
PILOT	50	50	STOCK
NEEDLE	1175#3	1174#3	STOCK
AIR SCREW	2	1.5	2.5
AIR BOX LID	OFF	OFF	OFF
MUFFLER	STOCK	STOCK	NO END CAP

Note: The jetting specifications above are for 6000 feet and above.

Product Support Dealer Program

by Gregg Thompson
Product Support Supervisor

We are pleased to announce the start of a new program designed to improve our awareness of new product problems and shorten our response time to solving them. It's called the Product Support Dealer Program and it was put into operation the first week of December 1997.

A small number of hand-picked dealers will participate in the program and will be asked to provide early product information to our Quality Assurance Group through the Technical Hotline. These Product Support Dealers were selected based on the product lines they sell; sales and service volume; geographic location (climate and terrain) and most of all, their service department's reputation and rapport with the Kawasaki Technical Hotline. They will communicate with the Hotline every week to discuss product problems and potential solutions.

Our thanks go out to all the dealers participating in this program. We are confident this program will contribute significantly to our on-going efforts to make Kawasaki products the best that your customers can buy. ♦

1996 KL650-A10 Transmission Change

by Randy Davis
Quality Assurance Engineer

In midproduction of the 1996 KL650-A10 (at engine number 32210 to be exact) the transmission output shaft was changed. The change was made basically to accommodate a new method of output sprocket attachment. The old sprocket is attached with an offset spline locking plate and two bolts that attach the plate to the sprocket. The new sprocket is attached by a nut that threads onto the output shaft with a bendable lock washer.

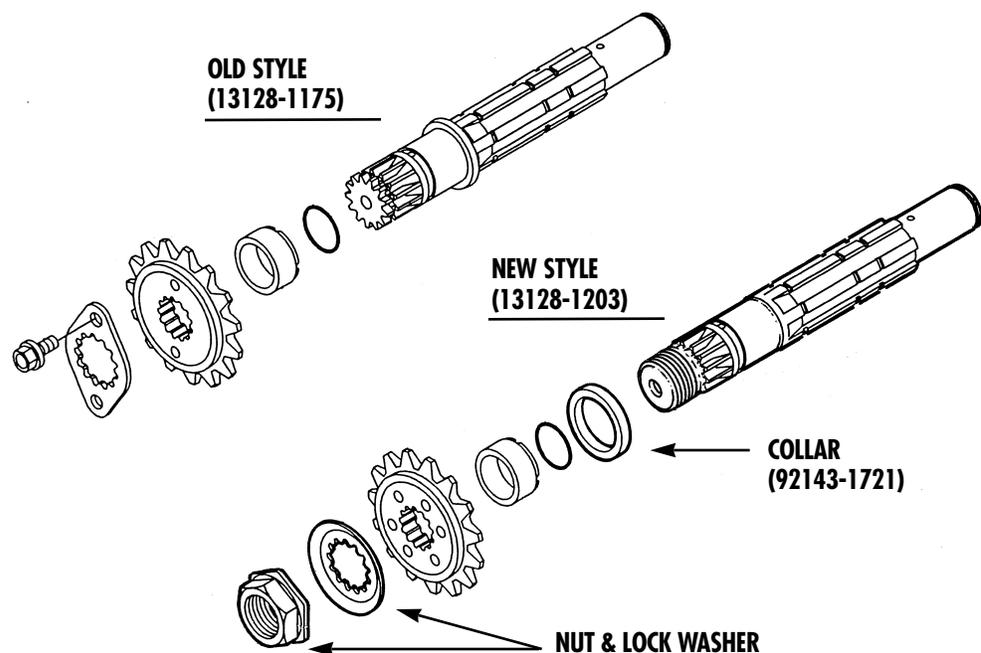
As long as you pay attention to the microfiche (or KIC) engine range information, you won't

normally have any problem with this. The key word there is "normally." You can get in trouble if you order the old style output shaft and it turns out to be on back order. If it is on back order, the part number for the old shaft (13128-1175) will substitute to the part number for the new shaft (13128-1203); but the new shaft is not an exact replacement for the old one. The new style shaft can be used in the old transmissions (KL650-A1 thru early A10) provided you use one other part from the new style transmission.

The old output shaft has a shoulder machined

into it that locates the shaft against the big output shaft bearing. The new shaft uses a small step in the shaft and a separate collar (92143-1721) to do the same job. If you install the new style output shaft in an old transmission without this collar, second gear on the output shaft will be pulled over against the cases and bind up the transmission when the sprocket nut is tightened.

Of course, you would also need the new style sprocket nut and washer if you convert to the new style output shaft. The old style sprocket will work fine on the new style shaft. ♦



KX Suspension: Progressive Springs

by Craig Martin
Technical Support Technician

For 1998, Kawasaki KX125 and KX250 motorcycles feature dual rate progressive fork springs and triple rate progressive shock springs. You might be inclined to respond with "so what?"

Progressive springs aren't exactly a new idea. So why is Kawasaki using them now? Until recently the technology wasn't available to produce progressive springs to Kawasaki's production tolerances. Now that this technology is available, Kawasaki has developed superior front and rear suspensions using progressive springs.

Kawasaki has recognized the need for plusher initial suspension while still maintaining the bottoming resistance of earlier KX's. In the past, bottoming resistance was controlled with oil and the use of relatively stiff springs. The stiff springs that have become common in our industry have a couple of drawbacks that have also become common. The stiff spring that resists bottoming also produces a harsh ride over small bumps. The rider feels every ripple and bump in the track. Also these stiff springs

hold the bike and rider (read: center of gravity) high while in turns. A high center of gravity is not a good thing when you are trying to go through a series of turns as fast as you can. The progressive springs on the '98 Kawasakis allow the suspension to soak up even the smallest bumps and let the bike settle more in the corners (providing a lower center of

gravity) while still not bottoming on big jumps.

When you ride a new KX125-K5 or KX250-K5, your first impression might be that the suspension is too soft. You should have an open mind and keep on riding. You are riding on new technology and it takes some getting used to. When you realize that the bike is extremely plush but still resists bottoming

like last year's bikes, you will understand that this is one of the most significant improvements in the long evolution of motocross suspensions.

The parts microfiche for these models don't give all of the spring rate information for stock or optional springs for both the forks and shocks. Here is a table that provides all the pertinent information for all the springs. ♦

1998 KAWASAKI 125/250 SPRING CHART

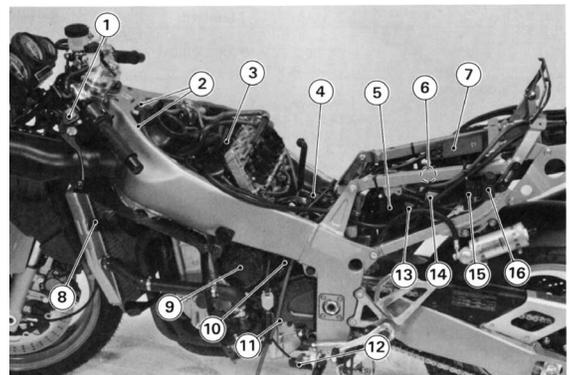
BIKE SIZE	APPLICATION	OPTION	SPRING RATE	COLOR CODE	PART NUMBER	SPRING COLOR
KX 125	FORK	LIGHT	.38- .40	NA	44026-1666	NA
KX 125	FORK	STD.	.39- .41	NA	44026-1660	NA
KX 125	FORK	HVY.	.40- .42	NA	44026-1668	NA
KX 125	SHOCK	LIGHT	4.4/4.7/4.9	YELLOW	92145-1112-45	VIOLET
KX 125	SHOCK	STD.	4.6/4.9/5.1	WHITE	92145-1113-45	VIOLET
KX 125	SHOCK	HVY.	4.8/5.1/5.3	RED	92145-1114-45	VIOLET
KX 250	FORK	LIGHT	.40- .42	NA	44026-1668	NA
KX 250	FORK	STD.	.41- .43	NA	44026-1662	NA
KX 250	FORK	HVY.	.42- .43	NA	44026-1670	NA
KX 250	SHOCK	LIGHT	4.6/4.9/5.1	WHITE	92145-1113-45	VIOLET
KX 250	SHOCK	STD.	4.8/5.1/5.3	RED	92145-1114-45	VIOLET
KX 250	SHOCK	HVY.	5.0/5.3/5.5	YELLOW	92145-1115-45	VIOLET

Locating Electrical Components

by Gregg Thompson
Product Support Supervisor

Have you ever spent more time than you wanted when attempting to find an electrical component on a bike? If so, it's probably because you didn't know that there is a pretty nice electrical parts locator section in most of our newer service manuals.

Since about 1988 Kawasaki service manuals have come with this handy feature along with the exploded view drawing of the electrics and other general information in the first few pages of the Electrical System Chapter. Check it out. Making use of this feature could save you quite a bit of time in the long run. ♦



Kawasaki Key Cutting Equipment Available

by John Griffin
Instructional
Designer/Instructor

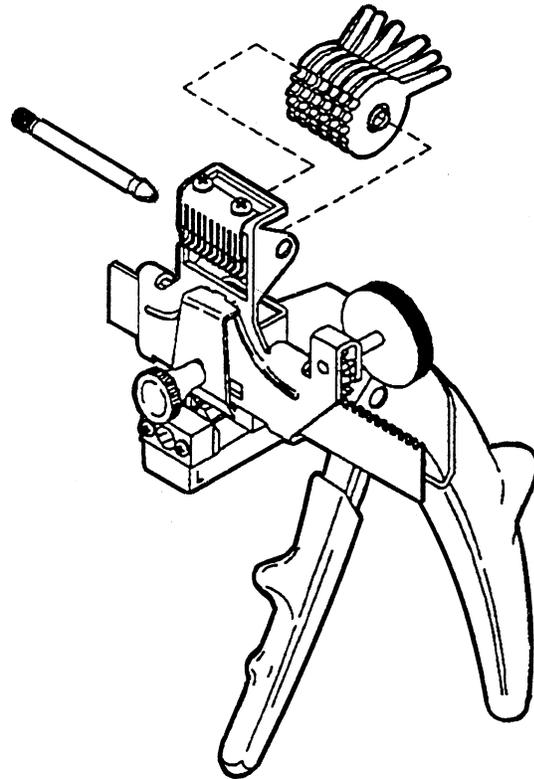
It is now possible to cut Kawasaki keys at your dealership thanks to Curtis Industries. Curtis has already shipped out over 150 Kawasaki kits. To order kits or replacement parts, contact Curtis directly at (800) 555-2878.

Curtis currently has two Kawasaki kits. Master kit #21238 (\$599.95) is for dealers without any key cutting equipment. It has everything needed to cut Kawasaki motorcycle keys and a few ATV keys. The second Update kit #21239 (\$239.95) is for dealers

possessing Curtis equipment for other OEMs. This kit enables you to cut Kawasaki motorcycle keys and a few ATV keys. A new kit to cut the majority of ATV and Mule keys will be available for sale in mid-1998.

Dealer Note: Be sure you and your customer record the key code from the factory-supplied key ring tag. Without a key code, you cannot cut a key. Write it on the A&P checklist, Owner's Manual, the sales contract, etc.

Kawasaki does not keep key codes on file for any vehicles. ♦



VN1500-D1,D2 Exhaust Valve Kit

by Gregg Thompson
Product Support Supervisor

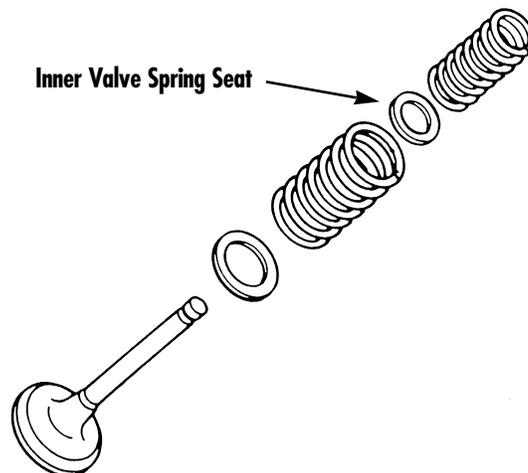
The parts kit (99995-1431) for Service Bulletin MC97-07 (Engine Stalling and Backfiring) includes six 12mm x 21mm washers that have caused some dealers a little confusion. These washers are spring seats for the inner springs on the intake and exhaust valves. They are included in the kit because some of the VN1500's covered by the bulletin came from the factory with single valve springs on six of eight

valves. The front cylinder exhaust valves had dual springs. Of course, the valves that had single springs from the factory

had no spring seat for an inner spring.

The confusion occurs because some units covered by the bulletin came

from the factory with dual springs on all the valves. These units already have all the spring seats and don't need the six that are included in the kit. This fact is not mentioned in the service bulletin, so some dealers are left wondering if they are supposed to use double spring seats on some of the valves. No, you are not. If you run across one of the units that already has all the spring seats it needs, just leave out the six that came with the kit. ♦



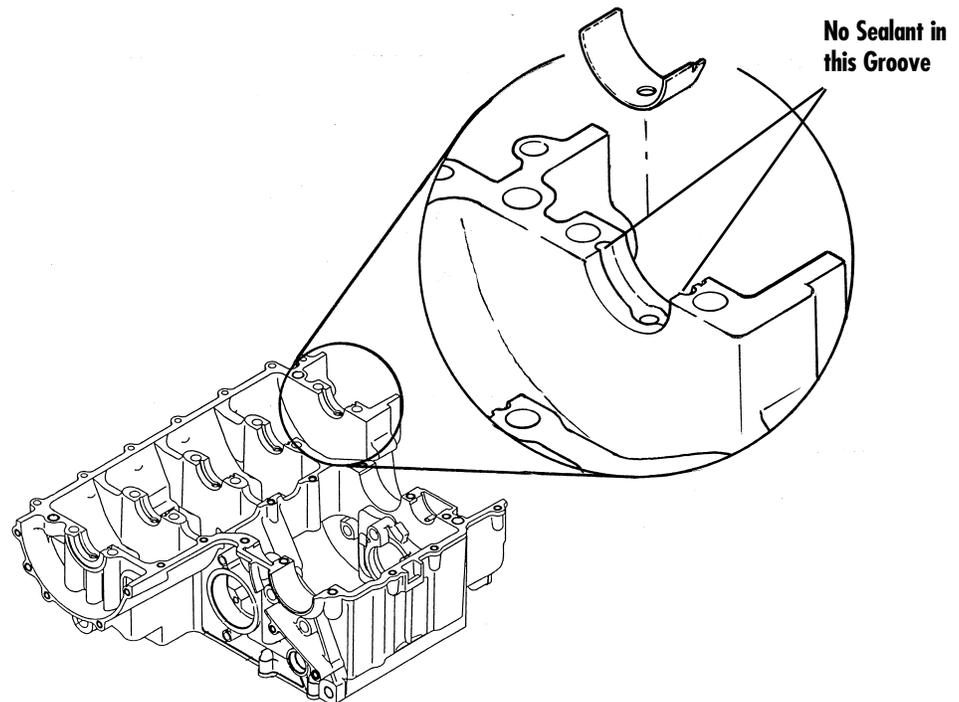
ZX-9R Information Worth Special Attention

by Gregg Thompson
Product Support Supervisor

- In the new ZX-9R (ZX900-C1) engine, oil is delivered to the top end through the #5 (far right) main bearing. There is a passage cast into the cases that carries the oil around the #5 main bearing shell and up through the upper case half to the top end. There is a similar oil passage cast into the cases at each of the other main bearing bores, but those passages deliver oil only to the upper halves of the main bearings.

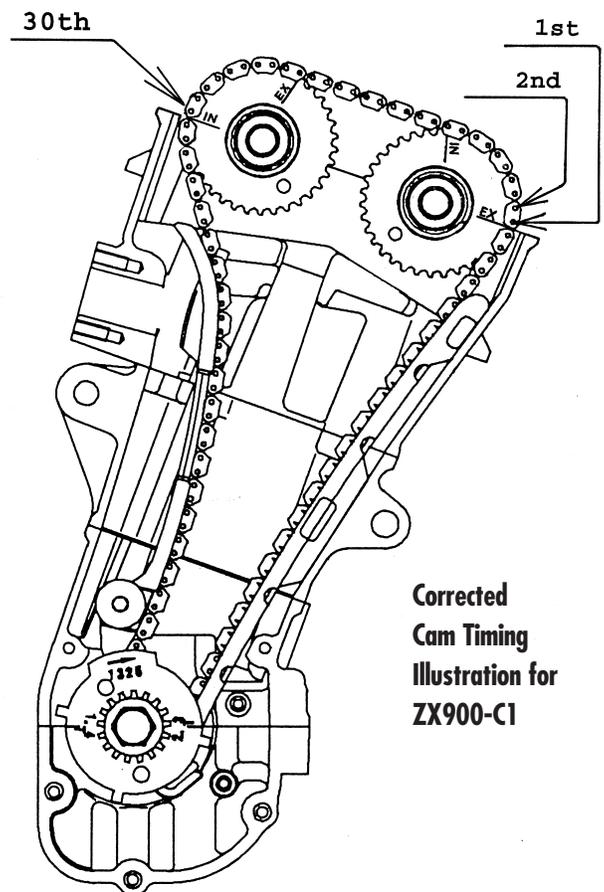
It is extremely important when you are assembling one of these crankcase sets that you **do not get any case sealant into these oil passages at the main bearings.** That means one should apply a very thin layer of sealant to the mating surface of the lower half, and don't get the sealant too close to the oil passages (especially on the #5 bearing). If any sealant squeezes into the oil passage, there's a good chance it will cause oil starvation and a serious failure.

- The illustration in the new ZX900-C1 service manual for cam timing is incorrect. The illustration shows the 30th pin well above the timing mark on the intake cam sprocket, with the timing mark



pointing directly at what appears to be the 31st pin. However, in the drawing, the arrow indicating the 30th pin is actually pointing at the 29th pin. And in reality when the cams are timed properly, the mark on the sprocket will point between the 30th and 31st pins. That puts the 30th pin just above the gasket surface and the 31st pin just below it once the cam caps are tightened down.

Note: With the cams timed properly and laid into the head, and the cam bearing caps loosely in place, install the camchain tensioner before drawing the cams down with the bearing caps. This will keep the chain from jumping a tooth on the cams while you draw them down into the head. ♦



New Emission

Continued from page 3

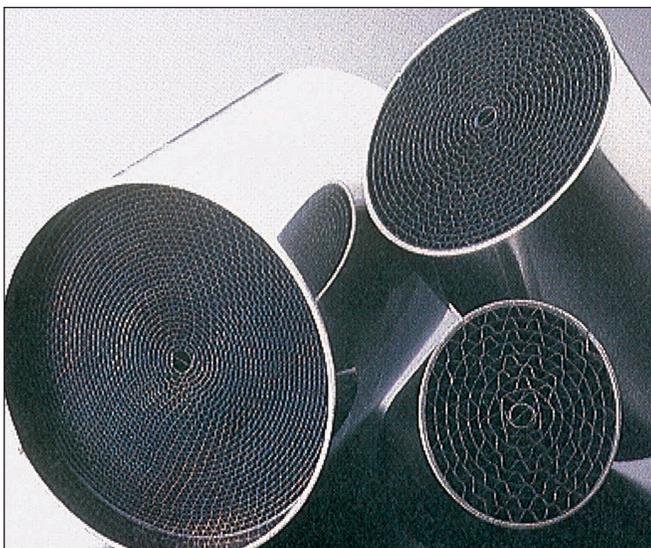
g/km HC and 1.4 g/km HC for motorcycles 700cc and above. NOx emissions are regulated separately by the EPA and CARB. CARB has recently announced plans to implement new motorcycle emission standards for the near future.

Kawasaki introduced throttle position sensors (K-TRIC) and catalytic converters in 1998 to reduce emissions and provide better throttle response, fuel economy, and more power for California models. How much difference does a catalytic converter make? Emissions levels of the 49-states '98 ZX-9R are 1.4 g/km HC, while the catalyzed California model

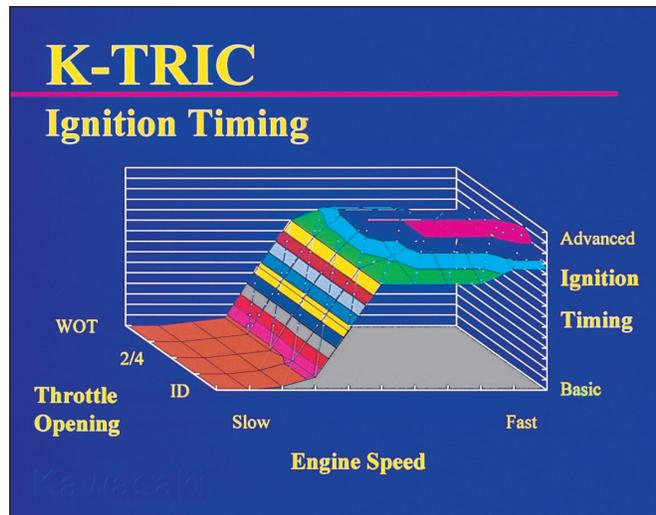
emits only .39 g/km HC. This reduction comes at the expense of only one horsepower or less than .7 of 1% of horsepower.

How much difference does the K-TRIC system make? While we don't have an exact comparison, we can evaluate the ZX-6R. The '97 ZX-6R produced 1.17 g/km HC. The 49-state '98 ZX-6R with a switch to Mikuni carburetors, the addition of K-TRIC, and very little else emits .75 g/km HC. The valve timing from '97 to '98 is the same. The '98 California ZX-6R with catalytic converter is cleaner still, at .63 g/km HC.

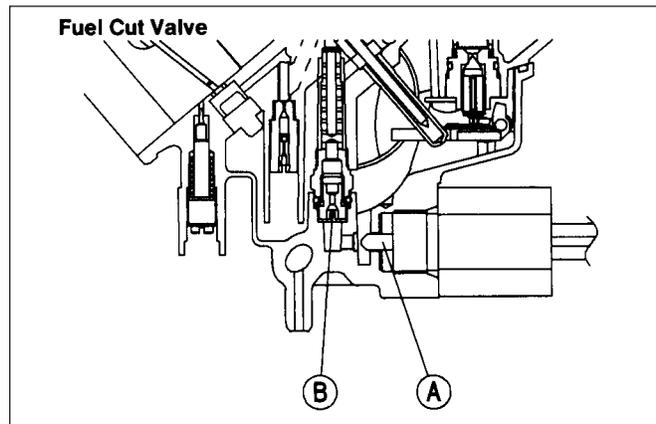
What does the future look like? New technology is coming soon. Fuel injection and catalytic converters will become popular in the next century, which is right around the



Stainless steel honeycomb coated with platinum and rhodium oxidize carbon monoxides (CO) and hydrocarbons (HC) into harmless carbon dioxide (CO₂) and water (H₂O).



A throttle position sensor ties into the ignition, allowing a three-dimensional timing map. The timing now adjusts for rpm and engine load.



An electronic solenoid in the float bowl works with the ignition to cut fuel flow with the rev-limiter or if the ignition switch is turned off while the engine is still turning over.

corner! Currently, the EPA standard for automobiles is a minuscule .25 g/km HC and several European countries have stringent motorcycle standards. CARB is planning tougher motorcycle standards as early as 2001 or 2002. It is possible a manufacturer may decide to produce certain models in just one low emission form for all countries.

This is the current state of affairs with emissions. It is imperative to stay on top of technical changes. As always, Kawasaki offers technical training incorporating the latest equipment and repair techniques. In the next issue we dive deeper into the California Air Resource Board's new rules for off-road licensing and riding areas. ♦