

FIRST TEST! YAMAHA IT400 SHOCKER

DIRT BIKE

JUNE 1976

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RIGHT THE
FIRST TIME**

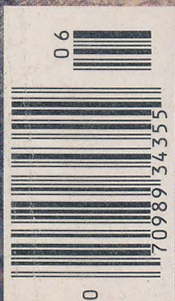
**FALSETTO
FLASH-OUT!
SUZUKI 100 vs.
YAMAHA 100 vs.
HODAKA 100**

**TIPS ON
SURVIVAL,
FORKS &
PHANTOMS**

**ONE DAY IN
ALABAMA**

**TWO HOURS
IN FREMONT,
CALIFORNIA**

OFF-ROAD MODS FOR HONDA'S XL-350



DIRT BIKE

JUNE 1976 • VOLUME SIX • NUMBER SIX

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Down in the pits with the screamers.

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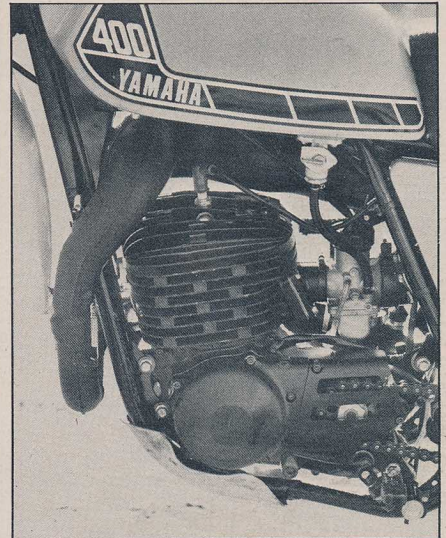
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ON THE COVER: Jim Connolly and Yamaha's IT400 get on better than expected. By either of them. Photo by Len Weed.

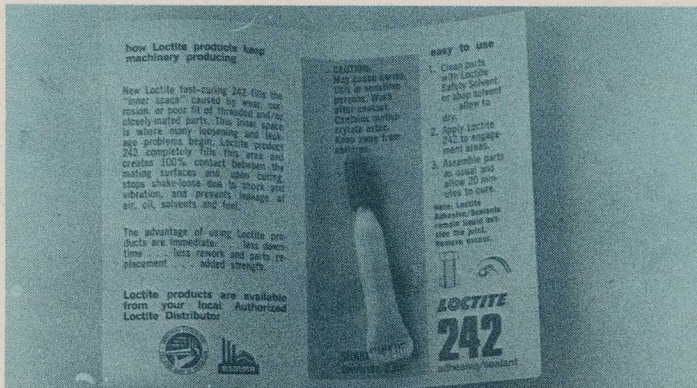
NEXT ISSUE ON SALE JUNE 10

"A low-bucks mod that can pay off in big dividends."

— Phillipson, Wegner, Anderson and Zeit-Geist

GOKI AIR FORKS CAPS

by Don Phillipson



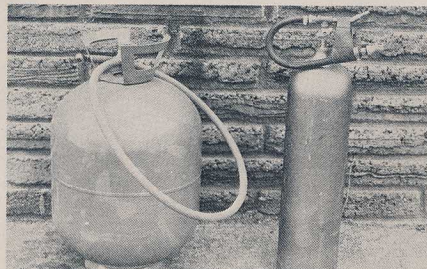
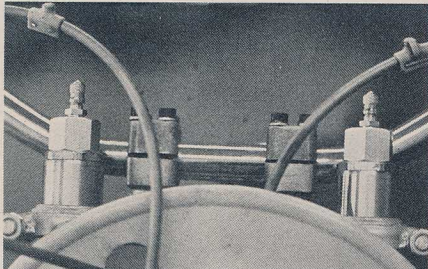
GOKI Air/Oil Fork Kit - Husky black forks & gray forks
Part numbers: 2001, 2002

Introduction
The GOKI air/oil front fork kit is a new concept in motorcycle suspension. Air pressure is going to be used in place of the conventional coil spring.

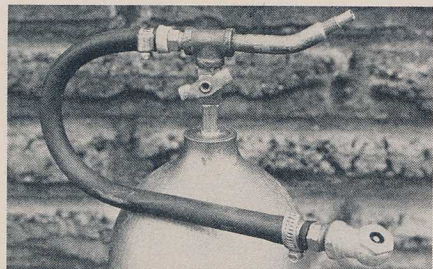
Installation Instructions

1. Support motorcycle so that front wheel is off the ground.
2. Remove oil filler plugs, and drain oil from fork legs.
3. Remove fork caps, and springs. DANGER: IF motorcycle is not supported when removing second fork cap, FORK WILL COLLAPSE.
4. If your fork seals were leaking try cleaning dirt out of seals and wipers before re-assembly. Your GOKI fork kit includes leaky seals.
5. Refill each fork leg with a high grade fork oil. Use non detergent motor oil. Listed below are the quantities. First figure is for forks that have 275cc of oil only. The second figure is for forks that have 235cc of oil. Black forks 275cc/235cc. Gray forks 235cc/200cc.
6. When installing the new threaded portions of the suitable solvent. Apply Loctite 242 (supplied) to the portions of fork cap, and tighten and tighten fork cap securely. Allow at least 20 minutes drying time. (note local instructions)
7. Install GOKI air/oil adapters in fork caps. Be sure and tighten adapters securely, also make sure o-ring is seated against head of adapter.

Goki Air Caps are simple and well made in construction. Instructions are complete and the only hassle is finding the right amount and ratio of air/oil.



A store-bought air tank for about \$30. Cost of the homemade model varies according to how much you pay for the air bottle.



Homemade model, gaugeless, holds about 150 pounds. Notice the brass fittings you'll need. I.D. and O.D. of all the fittings depend upon the size of the air bottle.

But there is a new trick item out that doesn't make you groan when you hear the price. And, better yet, it works. It's the air fork, and Goki Manufacturing Co. makes an easy (and inexpensive), way to convert your forks to air.

IN THEORY

There are reasons why air forks work better, or at least differently, than coil spring forks. First, air has a naturally progressive rate of damping, unlike normally coiled springs (only a few bikes use progressively wound fork springs). This means that when the forks are fully extended, there is "X" amount

of pressure. When they are compressed two inches, there is "X" amount multiplied by two of air pressure. When they are compressed four inches there is not simply two times the amount at two inches, but four times. So the rate of increase is, approximately, 1, 2, 4, 16.

With coil springs the rate of compression is 2, 4, 6, 8 (approximately, with the numbers being theoretical).

What this means to the motorcycle rider is that as the forks begin to compress, the feeling is soft, but the farther the forks are compressed the stiffer the forks feel.

With air forks there is, theoretically, less friction and inertia to overcome everytime the fork moves up and down. This is simply because there is no metal in the fork tube to rub and bind. What this is supposed to mean, related to motorcycles, is that the front wheel will travel faster up and down in response to whatever terrain it is traveling over. The forks will have a tendency to follow the ground more, while spring forks will have a tendency to remain momentarily compressed when the front wheel is moving very rapidly. And, there is less unsprung weight. To find out how much, just weigh your fork springs.

Finally, air will make the fork seal work more efficiently. This is because the air will press the seal

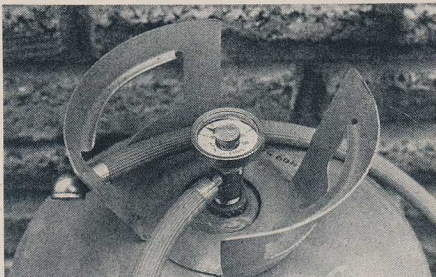
against the fork tube from the inside. While there is enough air pressure in this respect, there is not enough pressure to make the seal shoot out of place, as some people fear.

IN PRACTICE

We rode three motorcycles fitted with the Goki air caps to see how the theory worked in reality. The bikes were two Yamaha monoshocks, and a Trackmaster desert bike using Red Wing forks.

There were several noticeable advantages with the air forks. First, and probably most important, was the advantage of adjustability. If a rider were going to ride motocross one week and in the desert the next, all that was needed was a change of air pressure. Even better, when taking a few practice laps it was easy to adjust the bike to a particular track. When there was more than one person riding the bike it was also possible to adjust it for rider weight and preference.

Beyond the ease of adjustment, there was one word that almost everyone used when describing the feel of the forks: "smoothness." This feeling of smooth riding comes from the progressive action of the air and from the lack of friction because of



Store-bought holds 300 pounds of air.

the absence of metal. There was an initial complaint, however, along this line. It was that the forks felt too soft, as if they were "mushy." But this complaint was rare, and we found later that this person did like other bikes with air forks, ones that were set up more to his liking as far as air pressure and amount of oil in the forks goes.

When our riders were asked if they could actually feel the wheel sticking on the ground more, most said "no." But then, most also added that the wheel did feel more stable. This is a fine distinction, so we just asked the logical question, "Which fork did you like better, spring or air?"

Continued on page 100

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GOKI AIR FORK CAPS

Continued from page 49

"Air."
"Air."
"Air."
"Spring."
"Air."

And those were our riding impressions. Four to one ain't bad.

PROBLEMS

Yes, Phoebe, there were problems. The major one was how to tune the bike to a particular rider. Remember that more oil is needed in the forks when the springs are removed. There is a formula for this, but the final determinant is rider taste. If you like a firmer feel with more damping, then you add more oil. Softer, with less damping, less oil.

In the Goki directions there is a recommended starting point, but the rest is up to you. Experiment with the amount and, if you are more particular and know what you are doing, with the weight of the oil. In cold weather, or if you want faster wheel action, use a lighter viscosity oil — say 10W. In hot weather, or if you want slower action (heavier oil flows more slowly), go to a heavier oil — 30 or 40W.

A minor problem we faced, and one that vanished as we got more practice in filling the forks with air, was leakage when we checked the air pressure. As a general rule, figure you are going to lose about two pounds of pressure whenever you check the pressure.

HINTS

When we first saw one of our riders filling his forks with an ordinary tire pump, we said there has to be a better way. There is; and though it costs some money, it is worth it.

The solution is an air bottle. If you think money is something to be spent, then go to most any department store or auto parts store and just ask for one. A little under \$30. But if you have to mow lawns on your day off to support your habit, then you might want to go the homemade route. First, locate a

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surplus store. Ask for a used air bottle, the kind the military uses to hold oxygen. If you can pick one up for under ten dollars, then this operation will save you money. If you have to spend more than that, you may end up spending more than you would for a store-bought model.

With your air bottle in your fist, go to a hardware or auto parts store that carries American brass fittings. Bottle fittings may differ, so just fit the brass into your particular bottle. Look at the picture and figure out what shapes you'll want. Then ask for some rubber hose, inside diameter the same as the outside diameter of your brass, and an air hose valve. Put it all together using hose clamps, either Teflon tape or Loctite, and a great deal of pressure when you tighten the whole thing. Nothing should leak. If it does,

disassemble and use more Loctite or Teflon tape, and more pressure.

CONCLUSION

Air forks are nice. Maybe even better than that. And they are inexpensive. You can quote me.

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