



The man and his creation. Eyvind Boyesen is already famous for his patented boost ports and reed-valve systems. Look for Eyvind's reputation to become even more famous once factories start switching over to his Boyesen Link system.

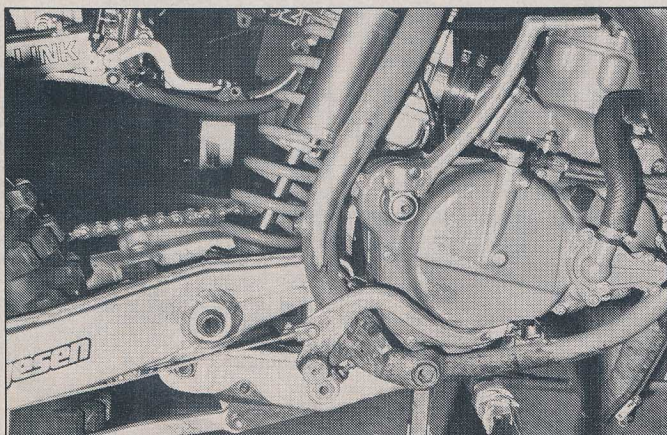
TESTING THE BOYESEN LINK SYSTEM

The 1989 new product review

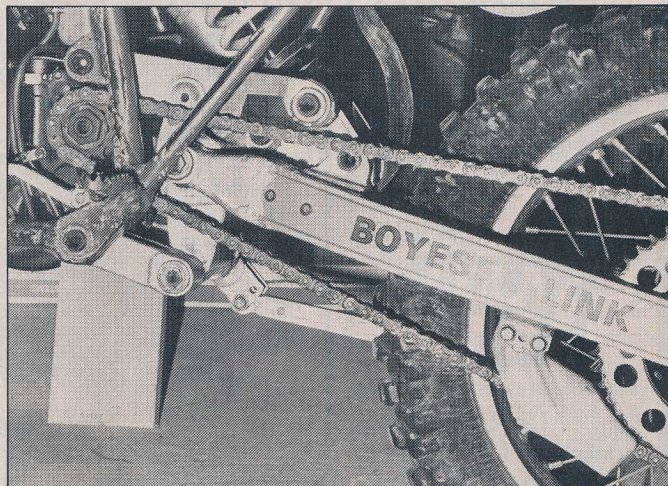
By Dennis "Ketchup" Cox



What the Boyesen Link basically does is prevent torque reaction and suspension squat under acceleration. The rear wheel stays hooked up and on the ground in rough terrain, instead of hopping around.



The Boyesen Link will not be a bolt-on or add-on system for the general public. That's because extensive frame and swingarm mods are necessary to accommodate the forward-mounted linkage. Yamaha has been experimenting for several years with a Boyesen Link system on its YZ lineup.



Yamaha has been experimenting for several years with a Boyesen Link system on its YZ lineup. Look for possible versions on '89 production Yamahas, Suzukis and Kawasakis.

Careening down the off-camber slope, the RM was going way too fast to negotiate the whoop-infested short straight leading to the killer uphill climb. Only a miracle could save the hapless pilot now. Hitting the worst of the bumps with the throttle wide open, a hearty *Yaaawhooo!* was heard over the wildly revving two-stroke engine's roar.

We couldn't believe our eyes! We could have sworn the rider was going to crash. Even the legendary Bob Hannah couldn't have saved that one. As we examined the rider more closely, the lightning bolts on the Bell MotoStar helmet stood out and the special helmet paint job and unmistakably lean body appearance told us that this was, indeed, Bob Hannah riding the vehicle.

THE MACHINE HANNAH COULDN'T CRASH

As Buckwheat Bob Hannah continued to circle the course, punctuating his ride with an occasional excited yell over each seem-

ingly unpassable obstacle, we noticed a rather tall, slim gentleman standing off to the side of the track studiously recording lap times. An ever-larger grin was spreading across his face.

That gentleman with the grin was none other than Eyvind Boyesen, the owner, designer and chief engineer of Boyesen Racing. Curiosity got the best of us, so we wandered over and struck up a conversation. Our first question was, "How can Hannah get away with that? Not even his talent is enough to have saved it in *those* whoops! What's going on here, Eyvind?"

CHANGES

"Right now, the factories have come as far as they can with suspension design," said Eyvind (pronounced Ivan) Boyesen. "The factories have been content to use what's currently available in suspension systems for the last few years. I think that in the very near future you will see all that change," stated Boyesen.

WHAT KIND OF CHANGE?

The change Eyvind predicts might very well be based on the innovative Boyesen Link suspension system that has been under development for the last several years. What Boyesen has done with his new rear swingarm linkage is to virtually eliminate the torque reaction of a machine's chain-driven rear wheel, and keep the bike from squatting under acceleration or deceleration. This effectively allows the rider to traverse rough, choppy ground at a much higher rate of speed, because the suspension system doesn't have to counter the effects of negative torque reactions. By designing a forward-mounted and self-adjusting pivot point for the swingarm, located via new linkage to a position down and below the countershaft sprocket, the physical swingarm pivot moves up and down with the rear axle. In actuality, the pivot of the Boyesen Link is at the center of the countershaft sprocket. This means that chain tension is

HANNAH ON THE 1988 SUZUKI

• **CHASSIS:** The gas tank has been lowered, with the seat/tank junction getting a better fit. Seat quality will be improved. Radiators are lowered to get the center of gravity down, and molded together. The front end gets kicked out a bit.

ENGINE: Horsepower is said to be greater than the '87 model. A full-reed motor will come stock next year. Expect a case-reed motor on the 125 and 250 in 1989. Carburetion is by a new flat-slide Mikuni TM series carb.

FORKS: New internal valving for the forks. Smoother beginning and stiffer ending of the stroke.



Bob Hannah in action on a prototype 1989 case-reed RM250. You can't even buy the '88 model, and Suzuki is already testing the '89 design! Hannah talks about the changes to his works bike, as well as what we can expect on the '88 production unit.

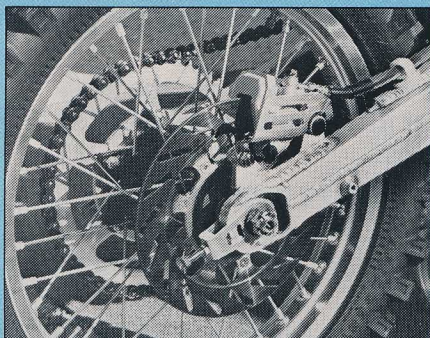
SHOCKS: Slightly different valving with new linkage lengths.

BRAKES: Improved front and rear disc components, similar to the ones currently being used on the works bike. •

HANNAH'S '87 PRODUCTION RM250 FACTORY RACER

• Differences from stock:

- * Different clutch cover to accommodate one extra plate in the mechanism.
- * Production cylinder, blueprinted with new-style 38mm Mikuni carb.
- * M-series factory pipe. (m-range is Suzuki's mid-range series pipe)
- * Stock ignition.



Braking, or rather a lack of brakes, has been a fault with Suzuki over the past few years. No more! Suzuki has been testing prototype front and rear disc assemblies on its works production racers throughout the season. They're powerful binders.

* Opened airbox to let engine breathe better.

* Radiators lowered two inches to get the center of gravity down.

* Seat custom-made for Hannah—ten millimeters lower than stock.

* Pegs are ten millimeters higher than stock and kept constantly razor-sharp.

* Answer SRV-bars.

* KYB works pre-production cartridge forks with adjustable rebound.

* Stock swingarm/works suspension.

* Brakes: Works adjustable master cylinder up front. Larger disc with more slots, front and rear.

* Tires: Dunlop 140 rear for loam, and 490 Dunlop up front. Hand-fabricated chain guide; stocker is too noisy. •



Suzuki concentrated on giving the 1988 RM250 a harder hit and a longer pull through the power curve. Carburetion is by the new flat-slide Mikuni TM mixer. A two-piece clutch cover might show up on the production bike.

BOYESEN

constant and tight, and that torque reactions associated with increasing and decreasing axle-to-countershaft distance (due to shock travel), do not affect the suspension action.

By all but eliminating the chain torque reaction associated with modern-day motocross suspension systems (suspension squat when accelerating), the Boyesen Link allows your rear suspension system to more effectively do the job it was designed to do—absorb bumps!

THEORY TESTED

To get an idea of how the Boyesen Link functions, start your bike and prop the front wheel against a wall. Now slip out the clutch and apply throttle. You should notice that the rear suspension "squats" as you apply throttle. Those are the torque reactions associated with opening and closing your bike's throttle. By controlling these reactions via a new forward-mounted pivoting linkage system, the Boyesen Link effectively gains better traction and forward drive. The suspension is better able to respond over rough, whoop-infested ground.

REALITY TEST

While taking a tour of Boyesen's facility back East, we had a chance to test ride an '87 Suzuki RM250 that had been specially

prepped for Bob Hannah. It had the latest version of Boyesen's Link system on it. The track we were to ride on was located a short distance from Eyvind's reed-making facility near Allentown, Pennsylvania.

The track was a long, meandering, very rough-edged outdoor course with steep up-hills and downhills that rolled across the scenic Pennsylvania hillsides. A cursory look at the course revealed that an above-average suspension system would be necessary to complete a lap!

Climbing aboard the RM there is no tell-tale impression that the suspension works different from any other bike's. We fired up the RM and headed for our first lap on the imposingly steep, rutted uphill. Wicking it up to get momentum, we scanned the hill looking for a good line up. Hitting the base of the hill wide open, we slammed into the first set of rolling whoops. Half expecting to get launched off the bike, we were surprised to find the rear wheel keeping traction and driving straight ahead. Not a hint of swap.

Farther up the hill we realized too late that a rain-rutted drainage ditch lay dead ahead, blocking the final ten-yard vertical ascent. It was too late to do anything but give the RM motor a healthy blast of throttle and hope Boyesen's Link was as good as claimed. Slamming into a ditch so hard that we fully expected to get tossed over the handlebars made us thankful the Boyesen Link

is as good as claimed! We shudder to think what would have happened had we been on something other than the Boyesen Link bike. Instead of sagging under the acceleration load, the RM's suspension was unloaded and ready to absorb the G-out forces! After cresting that nasty hill, we were believers. Hannah is right. With a Boyesen Link, a rider can get away with moves that would spit him off almost any other dirt bike.

THE MORE THE MERRIER

With our baptism of fire completed, we enthusiastically set out to put in some serious saddle time on the demanding outdoor track. The longer we rode the Link, the better we liked it. Our only problem was, now that we know what it's like to ride this system, we're not sure we care to go back to riding conventional dirt bikes. It looks as though we'll have to wait a while for a production Link system, though. And don't hold your breath for a Boyesen Link kit to modify your existing MXer or dirt bike. "Too costly and complex," say Boyesen's engineers. What you can look for is a Boyesen Link design possibly incorporated into several 1989 production off-road motorcycles. Which brands will use it remains unknown at this time. The most likely candidates are machines from Suzuki and Kawasaki. If so, 1989 promises to be the year the missing link in suspension technology finds its way to John Q. Public. We can hardly wait! □