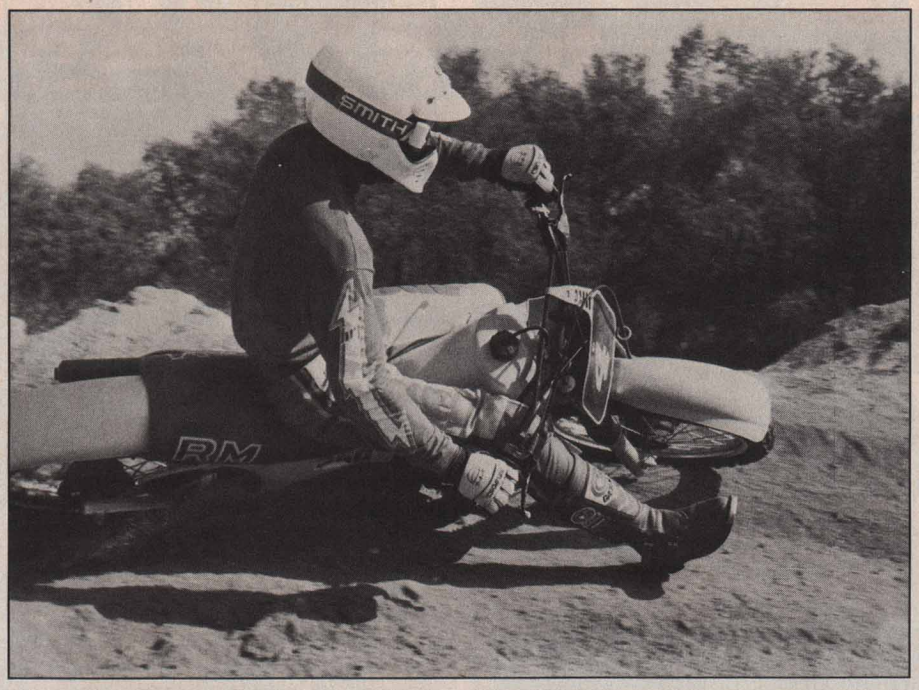
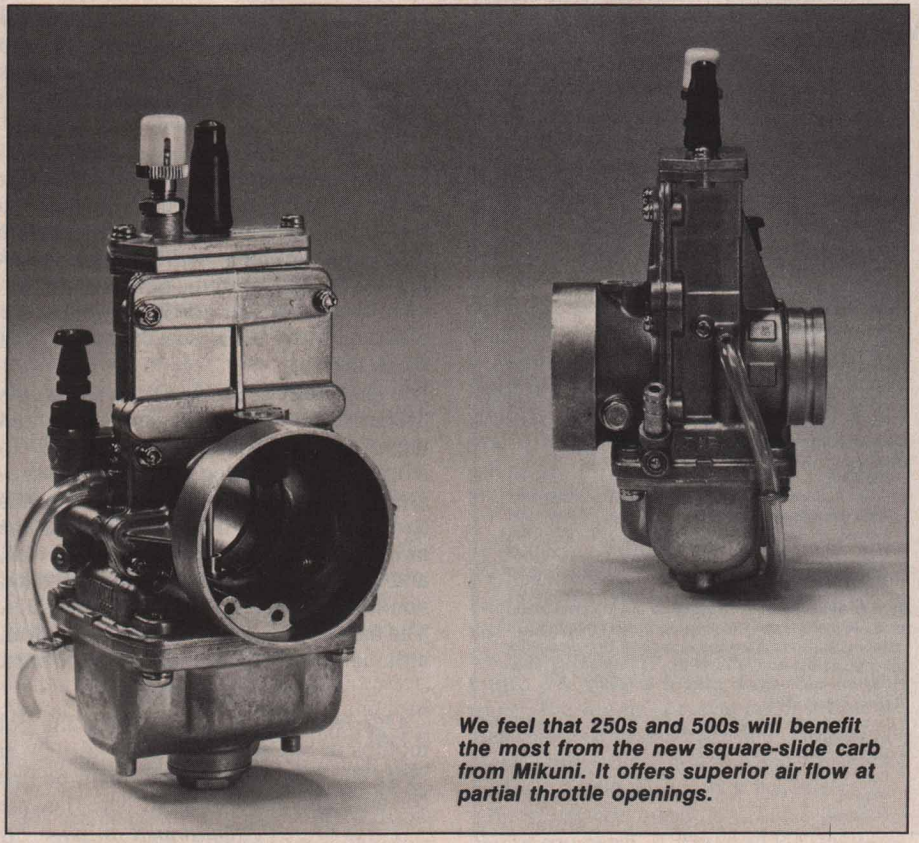


PRODUCT COMPARISON TEST

MIKUNI SQUARE-SLIDE CARB vs. ROUND-SLIDE

A pair of sophisticated 38mm carbs get the flow-bench test

By the Staff of Dirt Bike



We feel that 250s and 500s will benefit the most from the new square-slide carb from Mikuni. It offers superior air flow at partial throttle openings.

The highly touted Mikuni flat-slide carb made its production debut on the 1982 Suzuki RM250, which, as we all know, was a rocketmobile of the first order. Many racers thought the reason the RM was so fast was that the Floater 250 came with the new trick carb. A number of racers tried the carb on a variety of bikes . . . and many of them ran into jetting problems. The correct needle jets simply were not available.

Well, all the parts are now in stock and the Mikuni flat slide is getting a big push. "Screaming horsepower" go the ads. "Bolt-on instant rpm!" is another promise. With these things in mind, plus a good working knowledge of how several of our own flat-slide conversions have responded, we decided to slap a pair of carbs on a flow bench to see exactly where the differences, if any, were.

We chose a 38mm conventional round-slide Mikuni to run against the flat-slide 38mm Mikuni. Since both carbs had the same size throat, we really didn't expect to see any different in performance with the slides wide open. After all, a 38mm hole is just a 38mm hole, right? Not necessarily.

HOW THE FLOW BENCH WORKS

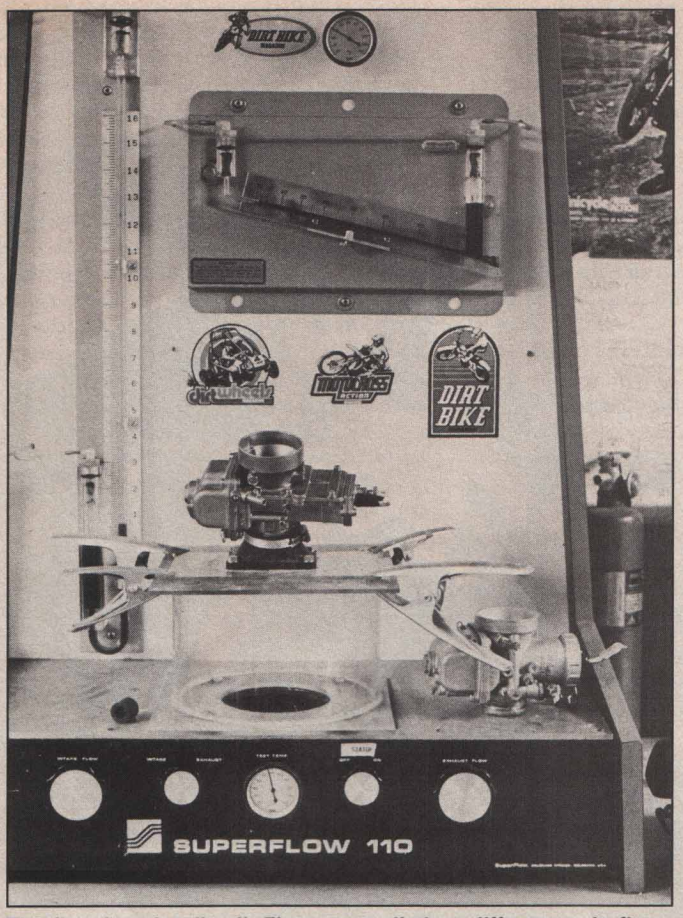
Basically, all the flow bench does is force air through the carb. The various imposing instruments on the flow bench are nothing more than devices to measure just how much flow is passing through the carb at any given opening. We decided to test the two carbs with their slides set at the basic minimum idle opening, then all the way through to full open in small increments. To ensure accuracy, the gap in the slide was measured with a set of inside calipers, rather than by using the old eyeball.

You might wonder how one 38mm carb could flow better than another with the same throat size. A number of factors, like bell shape, internal obstructions (or lack of) and direction and shape of airflow all contribute to the maximum potential flow. Some might ask why you don't just bolt on a bigger carb if you want more flow. Well, as a rule of thumb, the bigger the throat of the carb, the slower the airflow through the throat. Going to a bigger carb often means a dramatic drop in low-end and mid-range power and response, with a gain only in the upper revs—quite a steep price to pay. If you can get more flow out of the same throat size that the bike is designed for, then you can usually get an overall increase without paying a penalty.

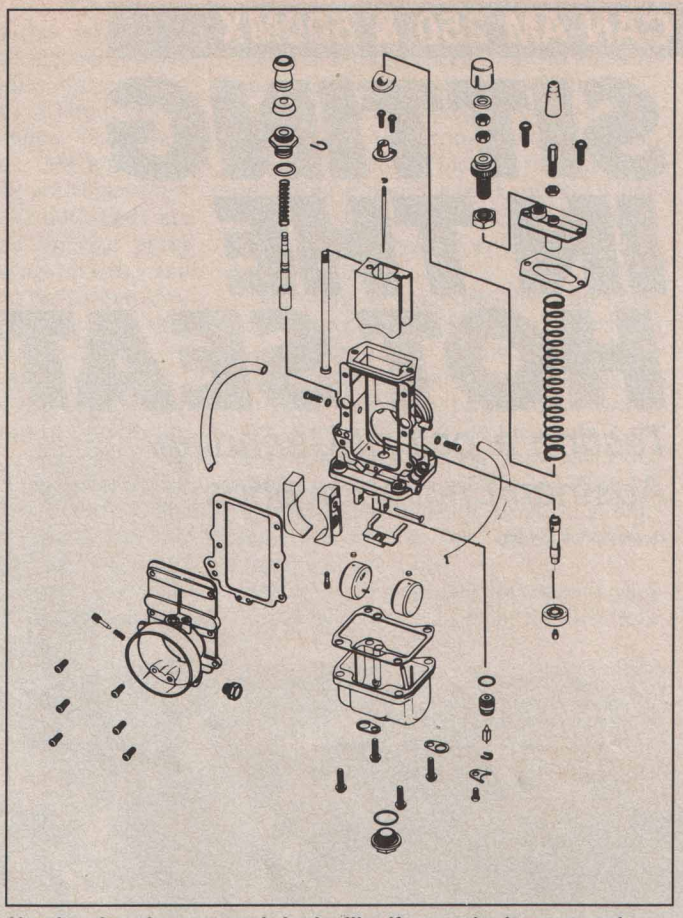
So all we're doing on the flow bench is finding out which carb will flow the best under identical openings.

READING THE GAUGES

Take a look at the seven test sequences on Chart A for the two carbs. Here you can see the actual differences in cubic feet per minute of flow. Then look at the graph (Chart B) to get an idea of the differences. It's quite clear that the square-slide Mikuni pulls *more* very early in the throttle openings than the round slide. It's also clear that



The flow bench tells all. There were distinct differences in flow rates between the square-slide and the round-slide Mikuni.



Here's what the new carb looks like if you take it apart and scatter the pieces all over your bench.

there's a pronounced dip right after the initial throttle opening. Then the square slide matches the round slide for performance in the mid-range, finally performing slightly better than the round slide from the mid-range on up. At the wide-open setting, it's better by a mere two cubic feet per minute . . . not a substantial difference.

These numbers would seem to indicate that the square-slide carb would work better on a 250cc or 500cc bike than the round slide, but not significantly better on a 125 than by boring out the existing carb 2mm or so.

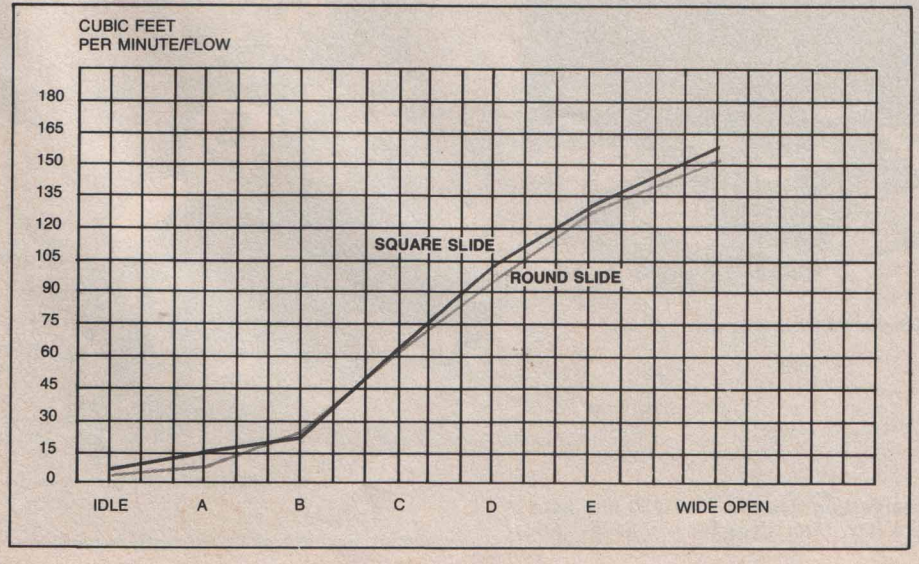
THE REAL-WORLD DIFFERENCE: RIDING

We did our comparison a little backwards. An RM250 Suzuki was used for the riding test and the stock square-slide carb was removed from the Suzuki and replaced with a conventional round-slide carb of the same size. Jetting remained very close.

When riding the bike, it was noted that the bike with the square-slide carb came on a bit crisper and cleaner right off the bottom and felt like it revved out somewhat (but not dramatically) harder. It was felt that there was a bit more mid-range snap with the round-slide carb, but there was an annoying lag, or hesitation, just when the bike was starting to work at the lower revs. Also, we could make the round-slide-equipped bike blubber when riding a gear too high at ultra-low revs. The square-slide bike would not fall on its face, but would not pull strongly enough to encourage the use of ultra-low revs on our racing 250.

THE BOTTOM LINE

There you have it—the advantage of the square-slide carb seems to be in throttle response and improved flow at partial throttle openings. There's also a slight gain at the top, but nothing amazing. The use of the square-slide carb might be best appreciated on a 500cc bike, where smooth throttle response is an absolute must. A strong-running 250 would also benefit, but we doubt if the swap would be worth it, dollar-wise, on a 125. □



CUBIC FEET PER MINUTE OF AIR FLOW

TEST NO.	THROTTLE POSITION	ROUND-SLIDE	SQUARE-SLIDE
1.	Idle opening	2.2 cfm	2.8 cfm
2.	A	9.0 cfm	14.21 cfm
3.	B	27.4 cfm	24.4 cfm
4.	C	63.0 cfm	63.0 cfm
5.	D	99.7 cfm	102.9 cfm
6.	E	132.2 cfm	132.2 cfm
7.	Wide Open	152.6 cfm	154.5 cfm