BOMBARDIER 125 PROTOTYPE

A Rotary Valve Single With A Twist — The Carb Isn't Housed In The Engine Cases! / BY JOHN WAASER

BOMBARDIER IS best known as the company that makes snowmobiles called Ski-Doos. "The machine that changed winter," they call it, and the description is apt. Now, many motorcycle manufacturers have discovered that snowmobiles are a useful adjunct to their bike lines, enabling them to keep production lines busy during the times when they might otherwise have to stockpile bikes, or layoff employees. Well, hang on to your hats, sports fans, because Bombardier is taking the opposite tack in a big way; it is about to introduce a motorcycle as an adjunct to its snowmobile line, and in some ways it's as innovative as its first snowmobiles were.

One of the reasons is Bombardier's application of the rotary valve. In most rotary valve installations, the total width of engine and carburetor has been wide to the point of being unwieldy. Enter Bombardier, and the idea of mounting the carburetor behind the engine, with a long intake passage to the side of the engine, and a simple elbow to the rotary valve. This means that the increase in width is no more than what is required to house the valve, plus essentially the diameter of the intake tract.

Purists, of course, will scream. Everyone knows that for maximum power the carburetor must be mounted as close as possible to the cylinder. Actually, tuning an intake passage is much like tuning an exhaust system, except that much less work has been done in the intake area. Tuned lengths, both between the air source and the carburetor, and between the carb and the engine, can be utilized to build any desired power curve. Combine this with the fact that the rotary valve gives a much shorter passage into the crankcase than a port in the rear of a cylinder, and much more accurate control, and you get the idea.

What is lost in one area is made up in other areas, and if the ultimate goal is a wide spread of usable power, as it should be on a dirt machine, this would appear to be a valid way of building an engine.

The world stood askance when Jeff Smith, former World Motocross Champion, announced he was emigrating to Canada to work on development for Bombardier. The world looked even more askance at the idea of a man of Jeff Smith's stature riding a rather rangy looking 125. But Jeff has competed in several stateside motocrosses with the prototype machine in the last year, and has trounced the best local opposition, proving both the strength and the power of Bombardier's neophyte motocrosser.

The bike has a longish 54-in. wheelbase, and puts out 21 "well-muffled" bhp. Jeff says they are now well below 92db (in the high 80s, but sound level halves every 3db, so they are putting out less than half the noise of a 92db machine). Concurrent with the 125, they will also introduce a 175, which harnesses 24 quiet ponies.

The machine is now undergoing final testing in Georgia. These photos were shot in October; much of the machine was finalized then. The tank and seat, engine and exhaust are all in their final shape. The frame is in its final shape, but the production frames will not look so spindly, as they will employ 7/8-in. diameter down tubes, instead of the

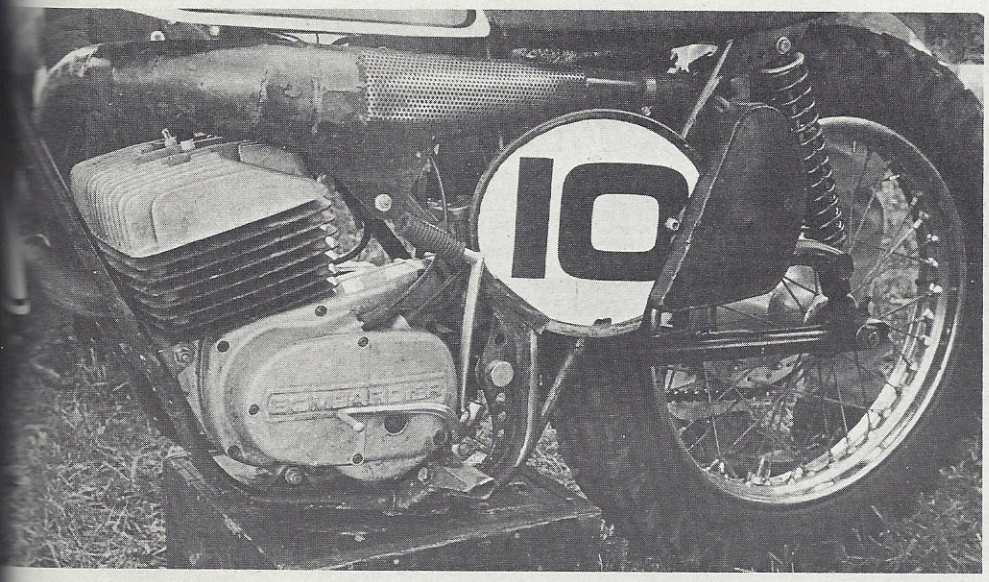
Former World Motocross Champion Jeff Smith did a good deal of the development work.

3/4-in. tubes on the prototype.

The wheels and brakes have been finalized since these photos were taken, but the public has not seen them yet. Hubs will be conical, rims will be steel on the enduro version and alloy on the motocrosser. ("It's difficult to describe a wheel," said Jeff....)

The machine will be applicable immediately to trials, and there are no plans to alter either the engine or the expansion chamber for that use; Jeff feels that they have been successful in creating a very wide power range with their engine design, with little penalty in the area of maximum power.

Price is expected to be competitive, at about $800 for the motocrosser, and about $50 more for the enduro version. Original plans had been to establish a separate dealer network, but current plans are to restrict marketing initially to the snow belt, using existing Ski-Doo dealers where they are felt to be satisfactory. (Many are already selling bikes.) Because of this policy, Bombardier does not expect to show the machine at Daytona, but the first production run should be hitting the showroom floor about the time you read this. Production is scheduled to start the first week of March, with a pilot run of 2500 the first year.



TOP
Note the intake tract. Carb has been taken out of the cases, a first in rotary valve engine design.

BELOW LEFT
Bike was the center of attraction at Pepperell, Mass., where Jeff Smith handily won his class after a slow start.

BELOW RIGHT
Front forks are adjustable in the triple-clamps. Seat is comfortable and makes a nice contour with the tank.