

technical

WATERCOOLING FOR MOTOCROSS



**We can see the ads now. "At the next motocross try
Prestone for better results on those hot summer days."**

By Dick Miller

The constant search for horsepower in the small-bore racers never ceases. It's possible to get a 125 engine to the point of disintegration because of the power. The trick is to get all that power and make it live.

A factory team can go for it regarding the super-powerful, high-rpm'er-type engines because their ultimate goal is winning, and if an engine will last three motos

that's all that is necessary. Even one engine per moto isn't that big a deal. Obviously this isn't feasible for you or me unless you've got a lot more money than I have. If you don't, then what is the alternative?

Horsepower is heat, and more horses means more heat is generated until there is so much that the engine can't live with it, or it will live with it and the heat will cause the engine to lose power. What do

you do? Yamaha and several other manufacturers have built highly sophisticated racing engines using water as a coolant. Most of these engines have been used for road racing and some of the results are now on the dealer showrooms as street bikes.

It's been a strong rumor for some time now that Yamaha is going to release a motocross bike with a watercooled engine. So far we



The DG water-cooled head setup is going to be available for most 125s in much the same setup as this prototype on Yamaha's YZ125 model.



The present position for the radiator was the fork crowns with a ventilated number plate as a screen for damaging debris.



The plumbing looks vulnerable but never presented a problem. ABS plastic fittings were used. The DG kit is supposed to have braided steel lines to carry the fluid.



No water pump is used and the flow of water is caused by thermal induction. Temperature gauge is mounted directly in the head as shown.



The head is a two-piece unit carved out of a solid block of alloy material.



We couldn't get the temperature over 150 degrees, and as of this writing DG is trying a smaller unit radiator working toward an ultimate 200-degree temperature running condition. You wouldn't believe the tolerances DG's running with this setup!

haven't been able to confirm anything from them on the subject, but we were able to ride DG's version of a water-cooled motocrosser. We procured it in its prototype form, and several things still have to be ironed out, but it looks like it will be an accessory kit by the time you read this.

The item hanging DG's efforts up the most is the radiator. They're hoping to find one that is already in production and small enough for their use. The condition we tested the bike in had the DG test Yamaha YZ125 using a truck's heater core mounted to the front fork (as we'll see behind a ventilated number plate).

A first impression tries to tell you that the added weight to the front end would be very noticeable, but such was not the case. Riding the bike around a rough MX course did away with the first impressions. The added weight wasn't noticeable nor was the handling affected by the addition of the radiator to the forks. We never weighed the bike, but Gary Harlow said that the added weight over the stock setup is about eight pounds. We couldn't tell the difference between the stock and the water-cooled DG.

A temperature gauge was mounted for testing in a makeshift foam holder at the steering head. The thermostat was fitted inside the cylinder head, which was a two-piece affair machined out of a solid alloy block.

Distilled water is used in order not to contaminate the cooling system. Surprisingly, it takes very little water, in volume, to keep the engine temperature at a very cool level. In fact, according to the gauge we were never able to get the temperature over 150 degrees. This is a little too cool, and the optimum which Harry Klerm, DG's chief tuner, is striving for is around the 200-degree mark.

Low engine temperatures, within reason, let the engine be set

MOVING!

Use this form to notify us at least six weeks before you move.



Please attach, in this space, the label from a recent issue to insure proper address corrections.

Mail to: **MOTOCROSS ACTION MAGAZINE**
Subscription Dept.
P. O. Box 317, Encino, CA 91316

NEW ADDRESS:

Name _____
Address _____
City _____
State _____ Zip _____

up with tight tolerances, higher compressions, warmer spark plugs and anything else that would cause excessive heat. The gains are more power output even when using stock hose and stroke. Most engines are set up fresh with enough tolerances for the engine parts to expand and still not have a seizure when it is run hot. If this factor is controlled, then the tolerances can be tightened, thereby gaining more power without any major modifications.

I've seen a couple of other watercooled setups just prior to our testing the DG unit. We were supposed to test the Nishichi unit but they never showed up, and now we hear rumors that they are no longer in business. Neither of the other units had a method of determining temperature, which makes it difficult to learn some important information. We never ran the engine without coolant to find out what would happen if you sprung a leak, since the bike wasn't ours to abuse. However, on the other hand, we never had to add water after many hours of running. There should be no problem with long motors. If that matter, a day's worth of racing. This could change depending on a different volume radiator being used and letting the bike run at a hotter temperature.

The watercooled engine has its definite advantages even for motocross, and especially in the 125 class where the optimum horsepower levels are being attained and more is being strived for. The disadvantages of more parts to maintain and break plus the added weight, even though slight, are something that you have to weigh in your own mind. One thing is for sure — you're going to see some on the race tracks very soon.

For more information contact DG Performance at 5552 La Palma Ave. East, Anaheim, California 92806

IT'S THE BEST OF RV VAN WORLD



IT'S DYNAMITE . . . LOTS OF INTERIORS, PAINTS AND VAN HAPPENINGS.

BEST OF RV VAN WORLD MCX-46

P.O. Box 317, Encino, California 91316

Enclose \$1.50 plus \$.50 postage and handling for each copy ordered.

Name _____
Address _____
City _____
State _____ Zip _____

ORDER THIS SUPER VAN SPECIAL NOW!

\$1.50

plus \$.50 postage and handling

www.legendary-motocross.com

1976 *DIRT BIKE* COLOR ACTION CALENDAR

12 Full Color Action Photos
... Map of AMA Region locations ...
Metric System Conversion Tables.



The Calendar Dirt Enthusiasts wait for every year!

IT'S BETTER THAN EVER!

And we even remembered to include the 1/4-inch hole for hanging.

ONLY \$1.50

plus \$1.00 postage

DIRT BIKE CALENDAR MCX-46

P.O. Box 317, Encino, California 91316

Please send _____ Dirt Bike Calendar(s).

Enclose \$1.50 plus 50 cents postage for each Calendar ordered.

Name _____
Address _____
City _____
State _____ Zip _____

EMBLEMS
SWISS EMBROIDERED — YOUR OWN DESIGN
WASHABLE AND COLORFAST
LOW MINIMUM — FREE QUOTES
Wild A. T. PATCH COMPANY
614 BETHLEHEM RD., LITTLETON, N.H. 03061
TEL. 603-444-3423