SEPT.-OCT. 1983 $1.50 ($2 NZ)
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trail & track

tests:

HONDA XLX 250
XL – 'ncy grows a carb

XT 600 YAMAHA
"Bowser drainer"

600 MX YAMAHA
"Rac'in thumper"

IT175 L/COOLED
Aussie waterbottle

MR MOTO-CROSS
Qld and NSW rounds

CONTENTS

No. 118. SEPT.-OCT. '83 $1.50 [$2 NZ]

tests

features

regulars

COVER: The XLX250 under test — will it continue to be a sales winner? Race insert: Leisk and Willoughby hard at it in Qld. Mick Nicol lands the big MX600 Yamaha on test day.

IT 175 WET

DO IT YOURSELF WATER COOLING

When the new K model IT came on the market, a number of people were very disappointed that Yamaha had not incorporated water-cooling on the bike. One of those riders was Peter Taylor from Barry Smith Motorcycles and after some deliberation he decided on a friend's suggestion to have a go at modifying his air cooled 'J' into a water-cooled job.

The biggest advantage with water cooling two strokes is that it reduces wear and they don't over heat and lose power, but such mods were, like all major mods to bikes, going to take quite a bit of sorting out, requiring many hours in the garage at night.

Firstly it was obvious the left hand side crankcase had to be changed, so one off a YZ 125H was obtained and the mounts were cut off to fit it to the engine.

Also off a 125H was used a water pump and the outside of this was moded. Then the pinion was cut in half and a gear to drive the water pump was inserted in the middle.

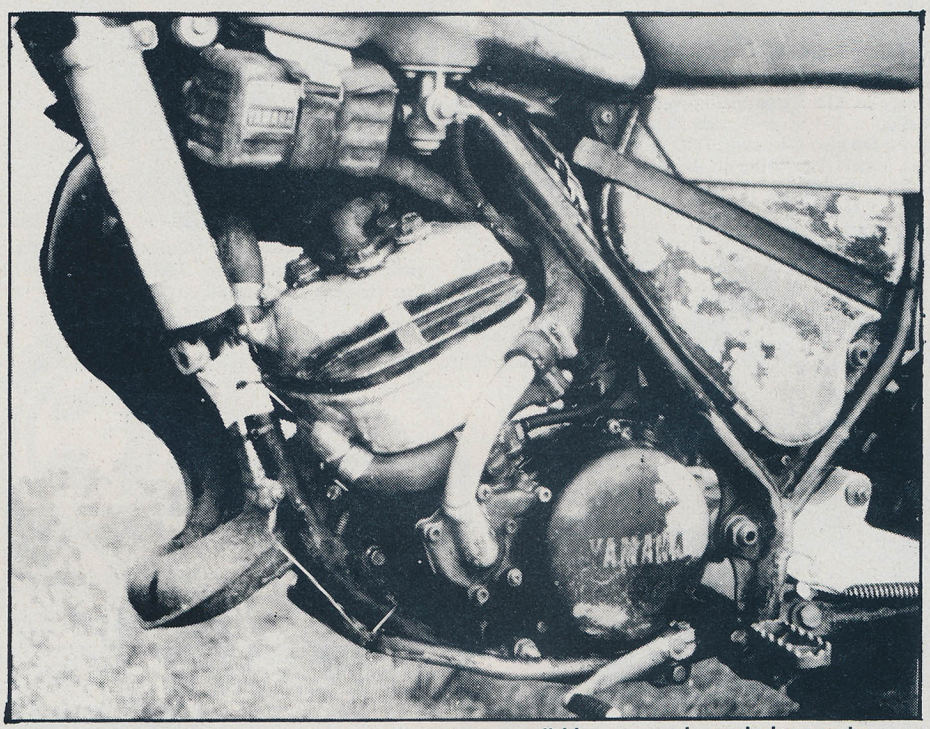
Because the pinion gear was now longer, the clutch had to be spaced out to avoid contact.

All the fins except the top one and the bottom one were removed on the barrel which was then ground down. The vibration segments were welded up and then a jacket was welded around the sides. The addition of an inlet and an outlet and that completed the barrel.

Similarly on the head, the central fins were removed and a jacket was welded over the top and once again an inlet and outlet pipe completed this section.

It was decided that the radiator should be positioned in front of the forks where the light usually goes, but how were the pipes going to reach from the motor to it without getting in the way? Why up through the steering head of course.

But we don't want water getting at the head stem bearings so they have to be sealed off. The idea (see diagram) was to run a pipe up to the middle of the steering head. Inside the head just below the top bearing and just above the lower bearing would be a seal which would seal this chamber watertight. At least that was the theory. In practice it turned out that the head stem was too rough to seal effectively and had to be machined smooth.



No prizes for neatness — but ten out of ten for accomplishing success in producing a water cooled engine that works. The jackets are all hand welded and the capillry fittings derived from existing Yamaha parts. Bike performs like a much bigger capacity bike.

In order to get the water out of the chamber, a hole was bored in the head stem and a pipe welded on to the top of the head stem which ran to the radiator. It all sounds pretty simple. However one had to have a seal with an outside diameter large enough to fit the inside measurement of the steering head and with a small enough centre to fit the steering head stem. And guess what? You're dead right; there was nothing available, and though the search was long and thorough, nothing could be found. One could be found that, had the right centre size and one which had the right outside diameter but no one seal had both requirements. All seemed hopeless until the penny dropped. Glue them together and you have just what the doctor ordered. And it worked. Both seals were glued together and also glued into the head as the surfaces of this was rather rought.

A Preston Petty head light number plate was mounted in front of the radiator and the whole housing was drilled with holes to let the air through. The head light also made a good protector for the radiator from rocks and sticks. The radiator also came off a 125H.

This basically completed the water-cooling side of things but to complement this improvement, Peter decided to update a few other things.

He began with the rear shocker. The standard il

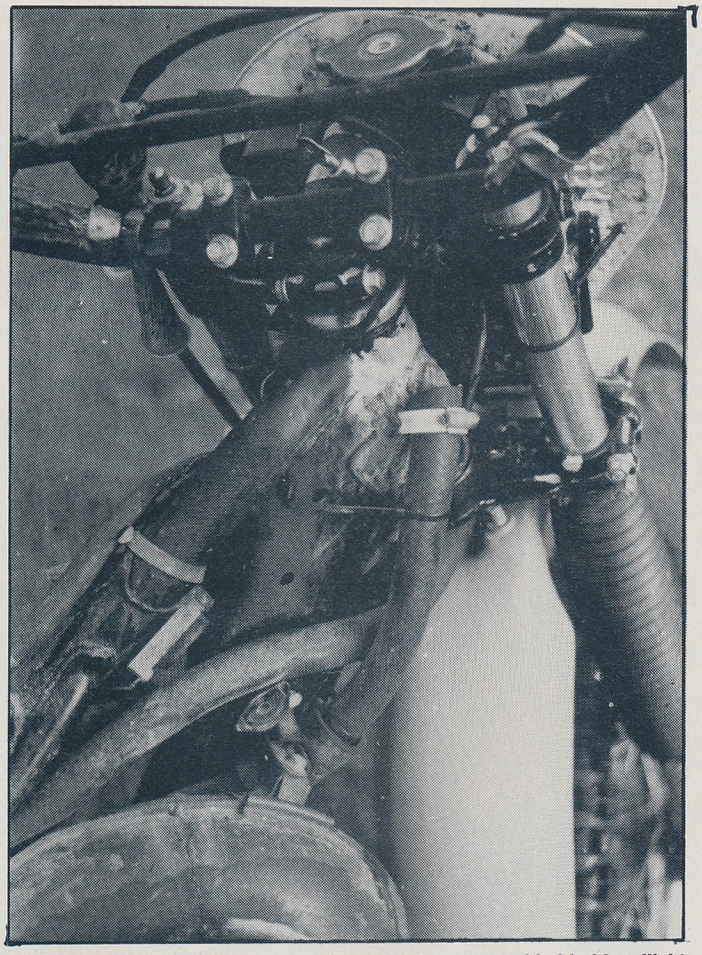
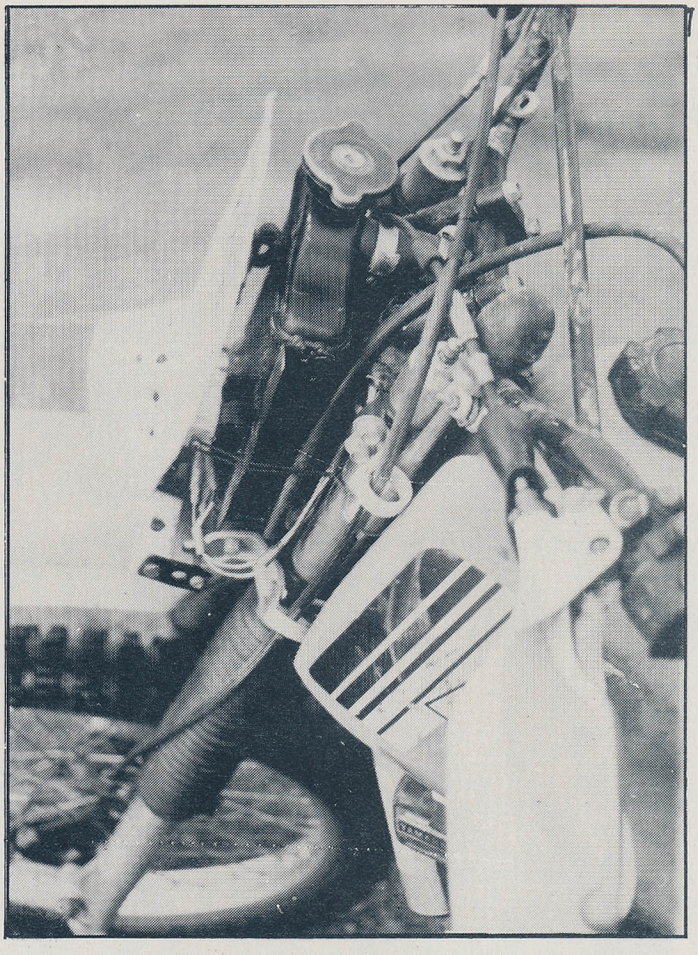
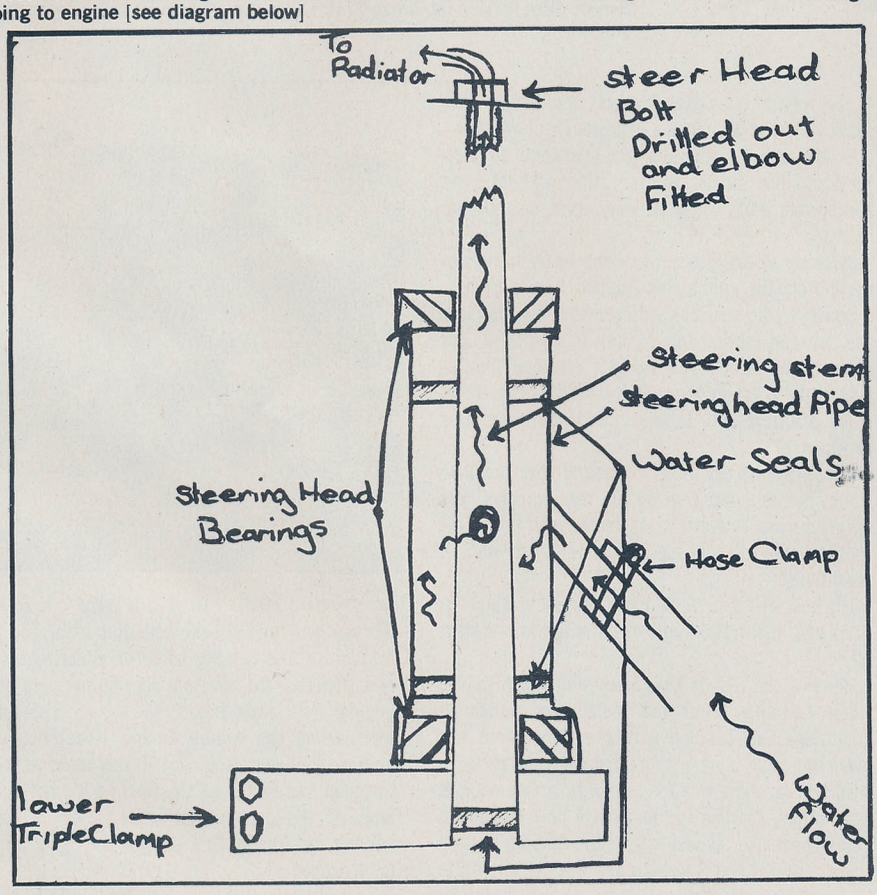


Photo here shows routing of water from radiator mounted behind headlight going to engine [see diagram below]



Weight of radiator etc. didn't effect handling any

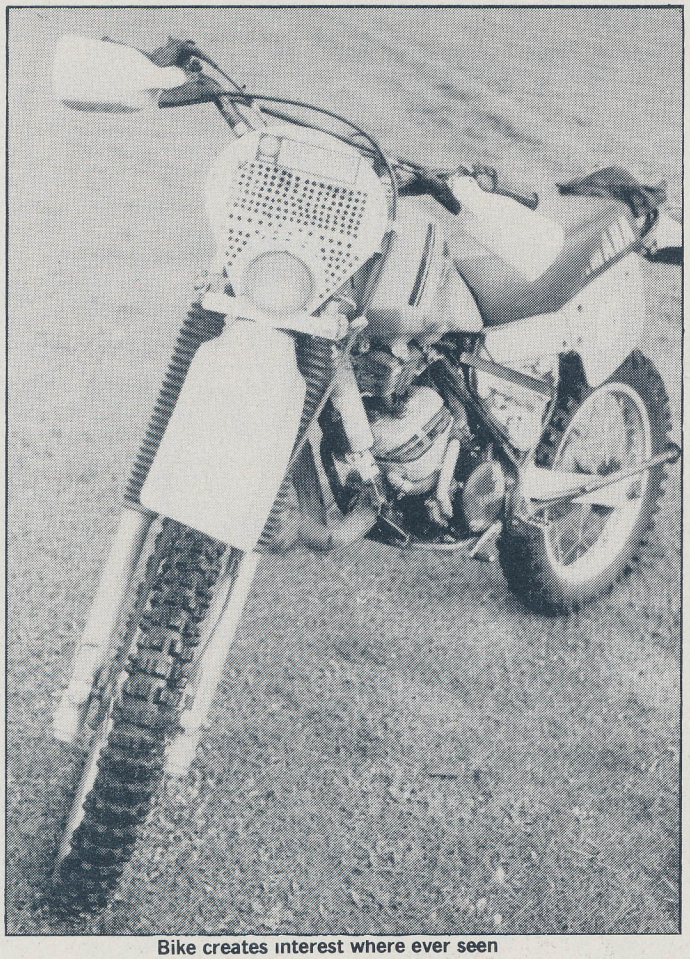


was like water so Belray 10 wt oil replaced this. By removing the inner spacer an extra inch of travel was gained, and since the old spring was beginning to sag one from an IT 250 was slotted in. However this is not quite set up with the right preload at the time of riding even though it does work particularly well.

Attention was now switched from Bob Martin from KGM who had done all the alloy welding to Phil Tainton who carved out the head in order to alter the squish band, and ground 20 thou. off the head, and another eight thou. off the barrel. As much as anything this was to arrest the problem of a leaking head gasket which was probably caused by heat slightly warping the surfaces when the jackets were welded on. The grind fixed it. In order to remove the wire baffles in the expansion chamber, this was cut in several places, while 15mm was cut out of the header pipe and an Answer muffler was added to the end.

Apart from the barrel being matched to the cases (it was way out originally) a port and polish achieved these changes. The exhaust port was raised 2mm. The inlet port was widened 1mm each side and lowered.

Now the carby came under scrutiny. Standard the main jet is 280 so a 320 was substituted while the pilot jet was reduced in size from a 70 to a 65. Instead of the standard nossle of P4, a P6 was used to complement the needle being raised one notch.



Bike creates interest where ever seen

Owner, Pete Taylor [of Barry Smith-Yamaha] "demo's" the IT's improved handling

Answer muffler improved mid range power

At the time of riding the cutaway could have been slightly altered as it ran a little rough down low.

As the speedo was not required and to stop breaking the drive on the front wheel, the appropriate parts off a YZ were used and slotted right in.

By using an extra steel plate and heavy springs in the clutch, the clutch was stopped from slipping.

Generally the gear box is fine except for the large gap between 1st and 2nd, so once again the YZ 125 came to the rescue. It's 1st gear replaced the 1st gear of the IT taking the ratio from 2.95-1 to a much more practical 2.45-1. The clutch shaft was also swapped.

On certain occasions it was found that the bike would not pull top gear so the rear sprocket was reduced from 44 teeth to 46 teeth, with the result that the bike will pull top gear under pretty well all conditions.

The cost of these mods had been some $500 for parts and about 100 hours of burning the midnight oil.

However the results have been well worth it. The water certainly keeps the motor cool under all conditions and coupled with the other mods has given the bike a heap more top end power. On a road this machine will keep up with a 465 without any worries. The low and mid range power seems to come on quicker as well giving the bike an over-all much stronger feel. The front end wasn't quite up to the standard of the rear, but a Terry fork kit is on the way and this should help this area. The front brakes are also lacking badly in effectiveness and feel. Generally the bike is a big improvement on the original "J" and should be a very competitive machine on the enduro circuit. It certainly looks unique. So if you see an IT 175 that looks as though the head has melted all the fins; no it's not nuclear powered, it's just the first water-cooled "J" that is passing you. Thanks to Peter for the opportunity to try the bike.

MURRAY CRAWFORD