

All About Suspension-Damper Rods & Fork Kits

POPULAR

CYCLING IND

June 1976 \$1.00

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SUPER TESTS!

- Bultaco 370 Pursang
- Yamaha IT 400

HOW TO:

Build A 116cc XR

Honda • Build Gas

Shocks-\$9.95 •

Enduro-ize Your

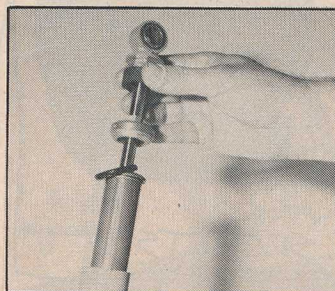
RM • True Wheels •

Change A Wheel In

7-Seconds!



JUNE 1976



Cover:
Marty Tripes puts the new Bultaco 370 Pursang into the outer hemisphere for Steve Reyes' trusty Pentax.

Centerspread:
Tony D., Roger, and other heroes, under the lights, earning a living.

POPULAR CYCLING

VOLUME 9, NUMBER 6

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Got an XR 75? Is it modified a little? Want to make it go faster? Have we got a plan for you! How would you like to take that XR 75, get it heavily breathed upon by Powroll Performance Products, and get back a machine that is so fast and competitive that if you were to put a plastic body on it, you could pass the machine off as a Funny car?

If you're sitting there nodding your head, you've come to the right place. You see, we had an XR 75 Honda, and over the years had done a little fiddling with the bike, putting on a carb and a pipe. It was fun for a while, but the bike really lacked the horsepower and grunt that we were looking for. Mixing and matching components never seemed to work. We contacted Powroll at P.O. Box 1206, Bend, Oregon 97701, and asked if they could do us a little number on the engine, to get some more life out of our little mini. They were more than happy to take our XR, and do what they termed "a little tinkering." After remembering what our 125 felt like, and the 175 that they had modified for us recently, we were more than anxious to see what the four-stroke wizards could do to an XR with a squeaky little 75cc displacement. It was also a challenge to us, to see if they could get the same good horsepower gains that we had experienced in the other products they sell.

In a little over thirty days, we received our XR motor in the mail. We dug through all the styrofoam, and found that except for the larger carb and a different pipe, our XR looked the same. We thought that we'd finally found Powroll's weakness.

The engine was quickly whisked back to the garage, dropped back into the frame, and fired up. Suffice to say that our XR was no longer the tame little mini-bike that we had come to know and love. What follows is the basic conversation we had with Powroll the following day.

PC: Hey guys, what did you do to our XR 75?

PPP: Why, doesn't it work?

PC: Just the opposite—it's a monster now! We put the engine in the frame, fired the bike up and noticed immediately that it sounded and ran like a full-blown dragster with a muffler!

PPP: That sounds about right.

PC: Then we went out to ride the thing, and couldn't believe it. The bike was getting third and fourth gear wheelies, it comes on quicker, and it revs almost endlessly. What in the world did you do?

PPP: Just a little tinkering.

After a lot of prying and pleading, we found out exactly what the "just a little tinkering" was all about. Our XR 75 had been transformed into a potential rocketship, getting a bigger and better facelift than most movie stars. We now had our hands on a full-fledged racing

machine capable of beating everything else, with the exception of another machine identically built. In our YZ 80-C road test, we stated that even a highly modified XR couldn't keep up with a stock Yamaha. That's all changed around now!

A lot of the modifications were performed in the Powroll operating room, behind closed doors. The first step was to install a 96cc bore kit. That alone would give a substantial increase. But they didn't stop here. A 3/8 of an inch stroked kit was dropped into the modified crankcases. Suddenly our XR 75 became an XR 116!

The next step was a little porting work on the cylinder head. The porting was performed with a neurosurgeon's accuracy, and the head was bench-flowed and set aside. A stud kit was installed, taking out the weak stock studs and replacing them with 8mm units. We asked Powroll why this was needed.

"Simple," they said, "with your

engine built the way it is, the cylinder would fly right off the top of the center-cases without the sturdier, bigger studs. You would also be blowing head gaskets like they were going out of style."

Our compression was brought up to 11.5-to-1. We have tested some big-bore motocross machines that didn't even come close to that! A 24mm Mikuni was slipped into place, with an adapter manifold on one end and a new air filter element on the other.

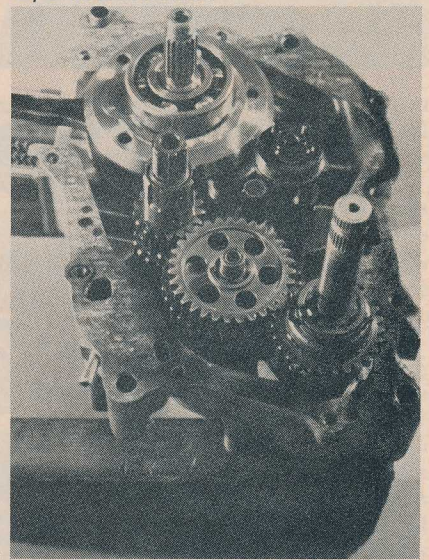
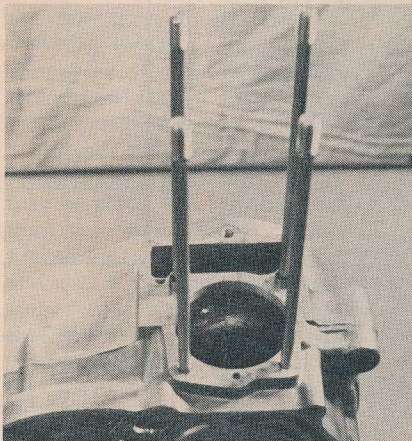
The standard Powroll downpipe was affixed, with a Super Trapp silencer on the end. To put the icing on the cake, our stock ignition system was removed and a button mag unit snuck in there while no one was looking. A new higher lift cam was installed to insure good flow throughout the engine's powerband.

What we've got now is an entirely different bike. If you look at the dyno chart in this article, you'll see that the power of the Powroll engine just starts coming to life and pulling strong where

POWROLL'S 116cc HONDA

By Brad Zimmerman

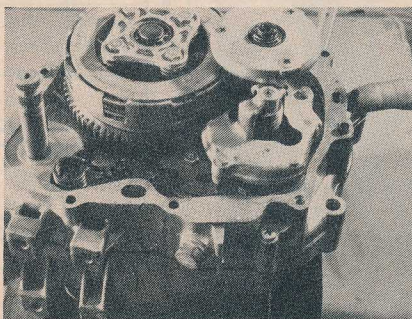
THEY'VE CREATED A MONSTER! XR

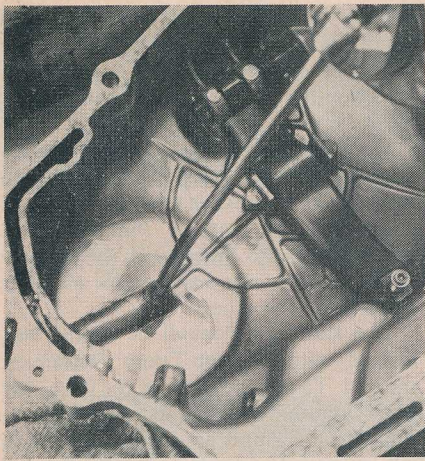


1. Crankcase machining is required to accommodate Powroll's 54mm oversize bore. Also necessary is the installation of beefier 8mm cylinder studs.

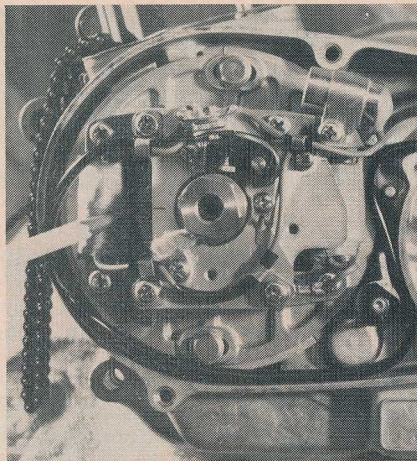
2. Follow the standard manual procedures to install the transmission and kickstarter gears. Powroll's stroked crank assembly installs the same as the stock unit.

3. Be absolutely certain that you've removed all the oil passage gasket punch-outs. The life of your engine depends on a full, free oil-flow.





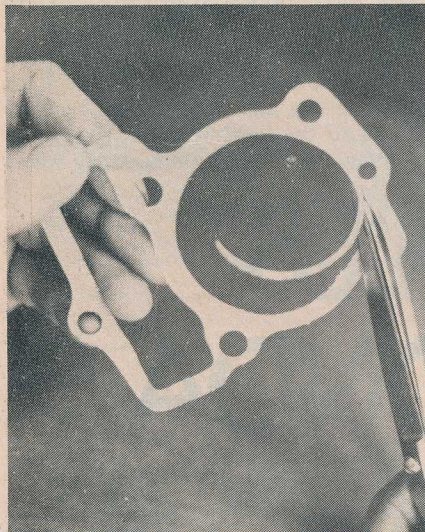
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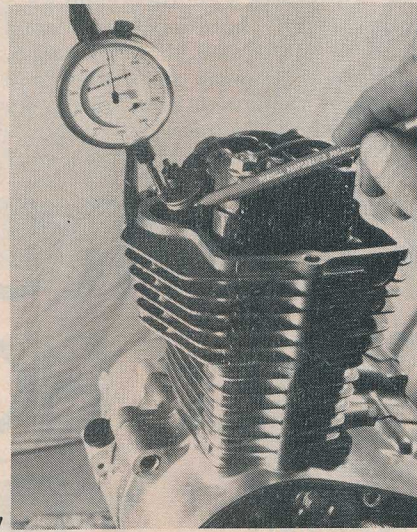
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| Engine RPM | Torque | Horsepower |
|------------|--------|------------|
| 3255 | 2.45 | 1.52 |
| 3906 | 2.30 | 1.71 |
| 4557 | 2.00 | 1.73 |
| 5208 | 2.45 | 2.43 |
| 5859 | 2.61 | 2.91 |
| 6510 | 2.68 | 3.33 |
| 7161 | 2.61 | 3.56 |
| 7812 | 2.61 | 3.88 |
| 8463 | 2.61 | 4.20 |
| 9114 | 2.53 | 4.40 |
| 9765 | 2.38 | 4.42 |
| 10,416 | 2.15 | 4.26 |

HONDA XR-75 (stock)



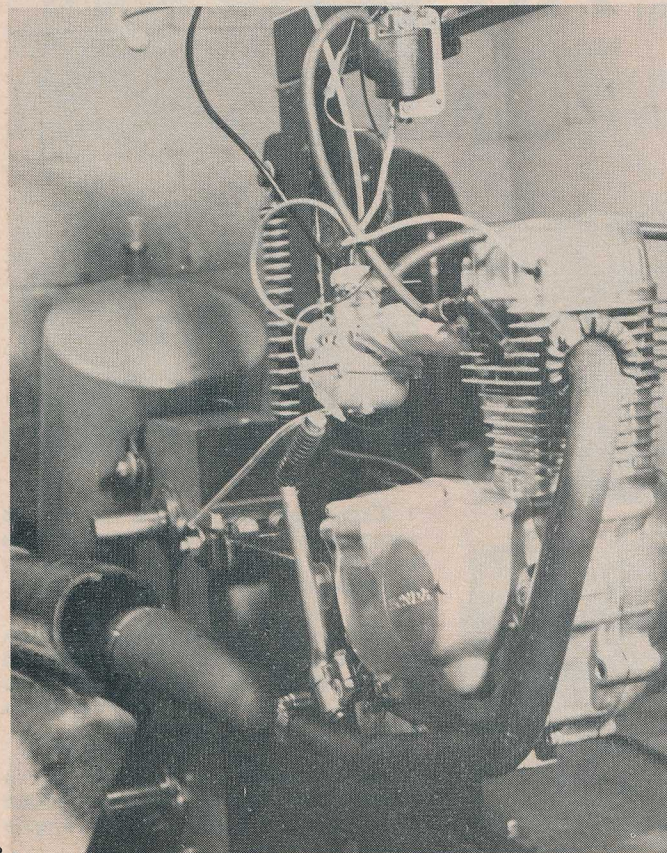
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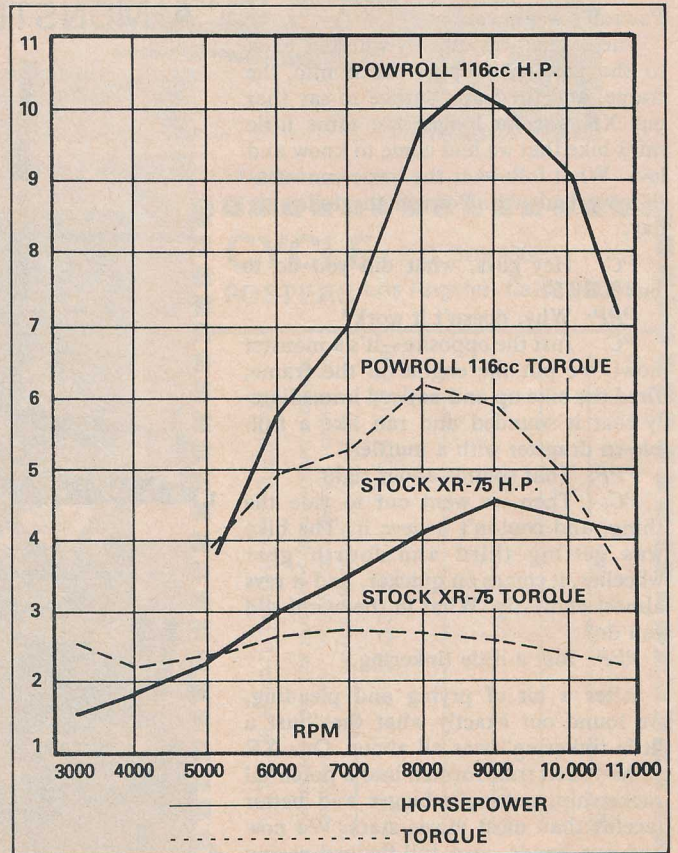
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| Engine RPM | Torque | Horsepower |
|------------|--------|------------|
| 5089 | 3.93 | 3.80 |
| 5588 | 4.52 | 4.81 |
| 6096 | 4.92 | 5.71 |
| 6604 | 5.01 | 6.31 |
| 7112 | 5.31 | 7.20 |
| 7620 | 6.30 | 9.10 |
| 8128 | 6.30 | 9.75 |
| 8636 | 6.30 | 10.30 |
| 9144 | 5.70 | 9.93 |
| 9652 | 5.31 | 9.76 |
| 10,160 | 4.52 | 8.75 |
| 10,668 | 3.54 | 7.19 |

HONDA XR-75 (Powroll 116cc)



8



4. Generously prime the oil system before the cases are put back together. You don't want to be running dry during those critical first moments of operation.

5. Powroll's button mag replaces the stock unit for quicker revving (it's 22 ounces lighter). Just align the two sets of marks for simple, accurate timing.

6. The base gasket needs to be trimmed to match with increased cylinder bore.

7. Light-tension valve springs are installed temporarily to permit cautious testing for valve-to-piston clearances. Simple mounting bracket allows precise dial indicator read-out.

8. All buttoned up and firing, Powroll's 116cc XR-75 struts its stuff for the dyno tests. The results were very amazing.

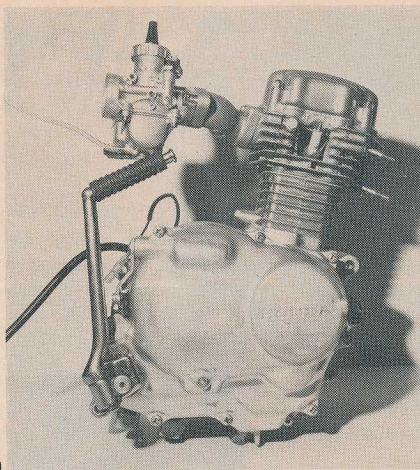
9. Powroll's engine builder Bill "BF" St. Jeor (who created this monster) charts horsepower ratings of two and a third greater than stock (which was 4.42 at 9765 rpm). Powroll modifications develop an impressive 10.3 hp at 8600 rpm.

10. If you get the entire kit, this is the way your engine will come in the mail. Remove the carb and connecting manifold for easier assembly.

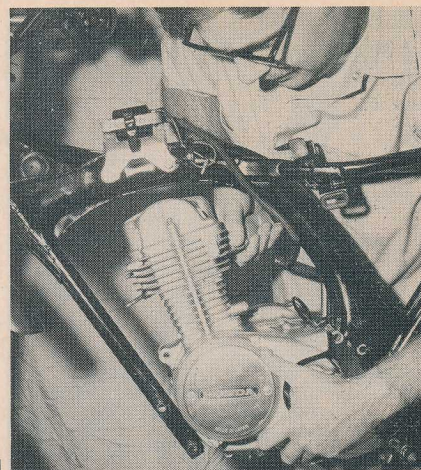
11. Bringing the engine up from below is the simplest method, thanks to the lack of a lower frame tube in the stock XR unit.

12. The lower rear motor mount bolt should go through first. Do not tighten it yet.

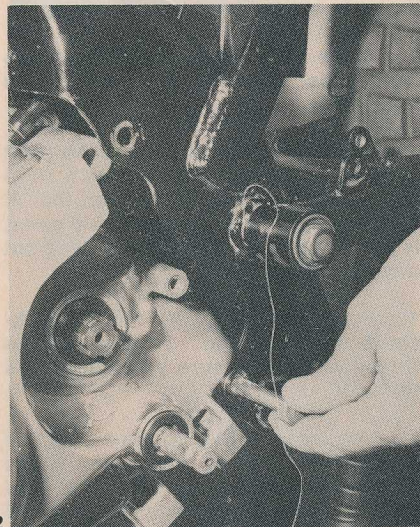
13. The upper motor mount will now slip in place if you guide the bolt and align the holes by moving the engine up and down, pivoting it on the lower bolt.



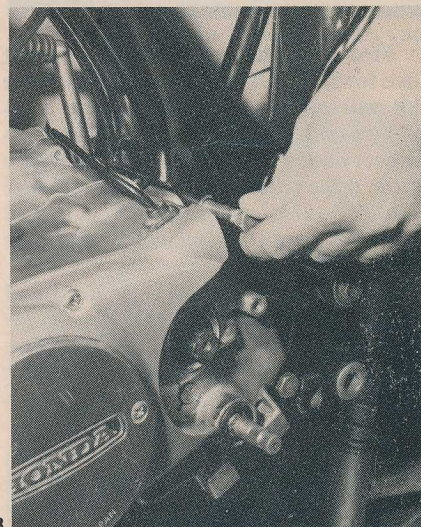
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13



9

the power of the stock engine petered out. You've got an engine that goes twice as high, twice as strong, and is at least ten times more fun to ride.

Which brings us to the next point. Riding the XR 116 was an experience. It took many hours of adapting to the new motorcycle, and cost us two rear fenders.

On your stock XR you've got to wait for the rpms to come up. With the button mag in place, the revs come up faster than you would expect. Suddenly it's time to shift to the next higher gear. First and second gear come and go so quickly, along with the ground underneath you, that you wonder where they went. First you're standing dead still, and suddenly it's time to shift into third. This isn't like any other mini-bike we've ridden.

Before the transformation, we could wheelie our little XR in first or second gear, thanks to our abundant weight and the fact that if we planted our rear on the back of the seat, the bike had no choice but to cooperate in lifting the front wheel.

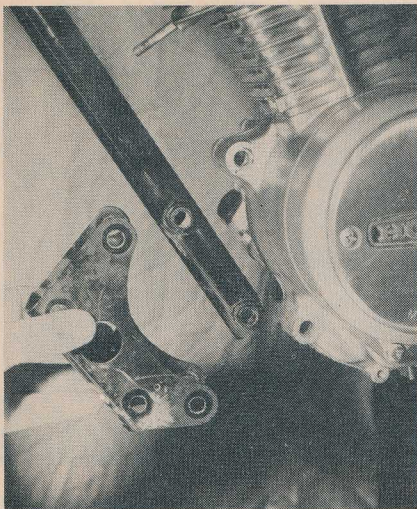
Now, when we want to do wheelies, we lean forward in an attempt to keep the front end from coming up and over. We had one rider, who is of the proper size and weight, ride our modified monster. He came back wide-eyed and white knuckled and didn't say a word. He just

stood there smiling, with a death grip on the handlebars, waiting for us to re-fill the gas tank for the third time so he could go out and ride some more.

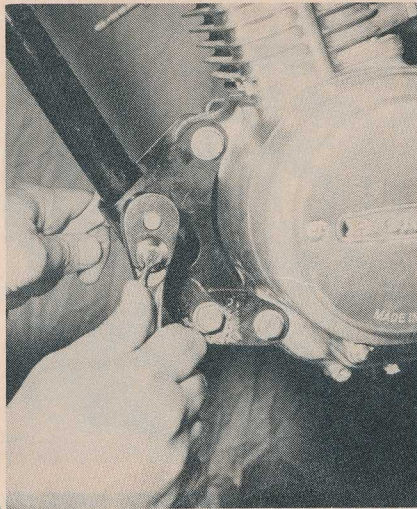
In the past, the only other engine built by Powroll that had this kind of response was the one that Brad Lackey had for his little XR. Brad used to compete in the annual Minibike Nationals for the Trans-AMA riders, mechanics and industry reps, in Richmond, California, held the night before the Livermore event. We could never figure out how Brad always got in the lead so quickly. Even with only four lap motos, his little XR would usually lap at least two-thirds of the field. When Marty Tripes showed up with a 250 Pursang motor in a tiny little frame, Brad's machine still held a commanding lead.

Now Powroll is releasing the engine to the public, and we were fortunate to get one of the first units that came out. You, too, provided you've got a basic XR 75, can have one of these fire breathing monsters—but it's going to cost bucks. Performance modifications, especially like this one, are never cheap. Just ask any drag racer and watch him cringe.

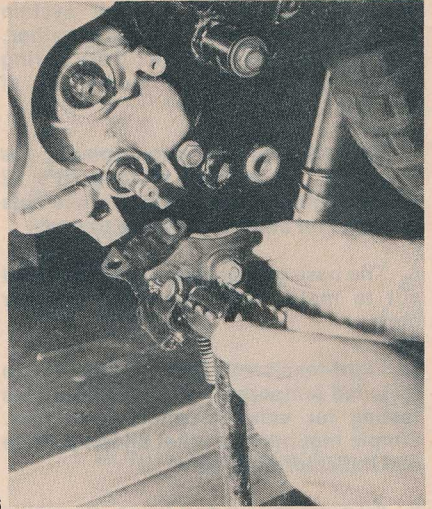
The Powroll package is complete, and lists for \$541.10. That sounds expensive—and it is. But if you look at what you're getting, the price isn't all that high.



14



15



16

First on the list is a 96cc bore kit that lists for \$54.95. The 3/8 of an inch stroker kit will run you \$74. These two components will bring the displacement up to 116cc, due to the dimensions of the bore kit and the stroker. A cam, part number 12612/P-12M, will run \$45, provided you send them your stock cam with your order.

The porting of the cylinder head and the bench-flow test cost \$70. The grinding people up at Powroll rely heavily on their flow testing apparatus. You won't get back a ported cylinder head until it's just right. Powroll doesn't do second-rate work.

Next on the list is the 24mm Mikuni carb to replace the tiny little stock unit. The carb, along with the proper mounting hardware, goes for \$54.95. It mounts up to the existing frame, and although the choke lever is hard to reach, it does clear the frame by about a quarter of an inch.

The standard Powroll downpipe for \$24.95 is included, along with a Super Trapp Silencer. Incidentally, Powroll,

14. Make sure that the front plate is right side up—you can put it on backwards.

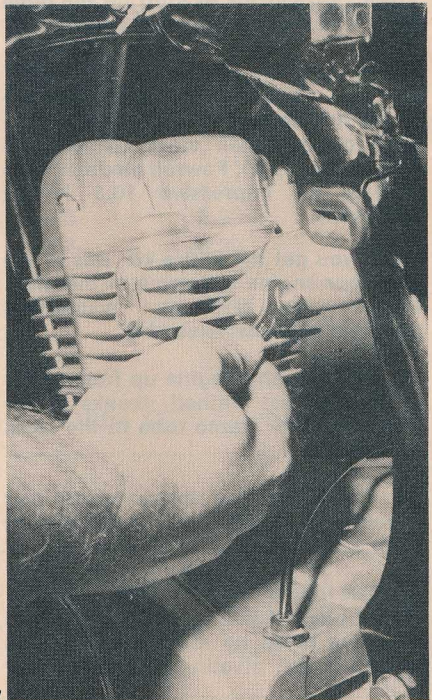
15. After installing all four of the front plate bolts, you can tighten down all of the motor mounts. Remember that if you're going to run the stock skid plate, it should be attached to the lower front mounts and the footpeg mounts.

16. Four bolts hold the footpeg/kickstand assembly on. They're a fine thread unit, so be sure you don't cross thread anything.

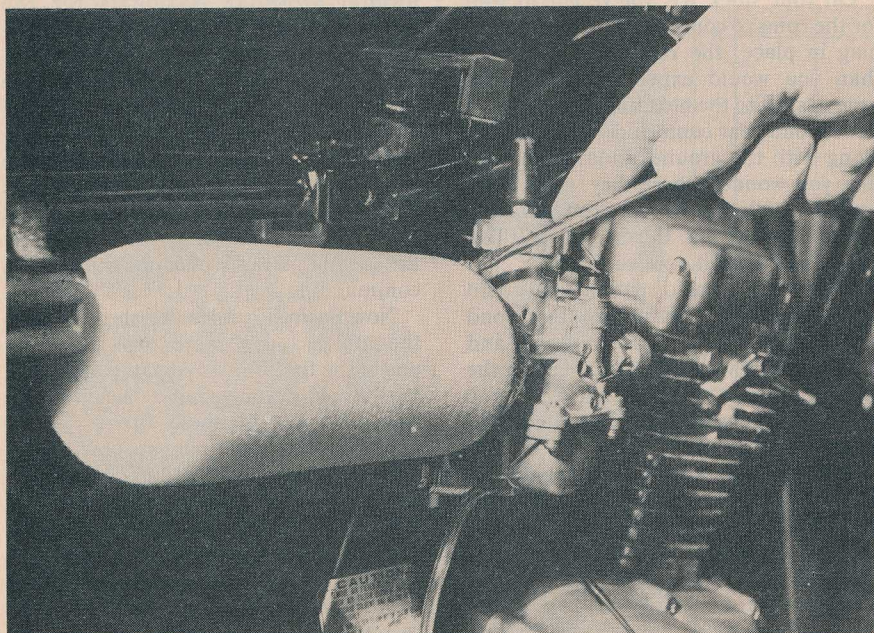
17. You can now bolt up the carburetor manifold by using the two 10mm closed head nuts. Be sure that you tighten both sides evenly to avoid any damage to the manifold, its gasket, or the stud bolts in the cylinder.

18. A Uni Pod filter is then installed on the rear of the carburetor. Oil the unit first, and apply a little layer of grease on the hose adapter.

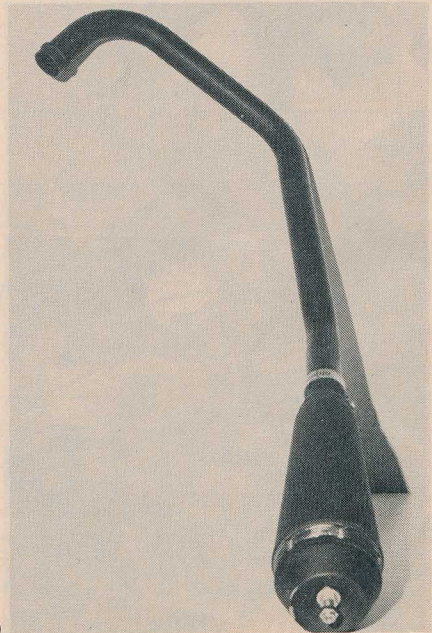
19. The Powroll downpipe is used, along with a Super Trapp silencer.



17



18



19

through their heavy research and development, found that the Super Trapp, with this machine's modifications, not only put out the best horsepower reading, but was the quietest of the various silencers that they had tested. You *can* go fast and quiet at the same time.

One of the most drastic and noticeable changes in the engine's characteristics was caused by the button mag. Simply stated, the button mag eliminates the drag on the engine caused by the stock ignition system. The button mag puts out a better spark, allows the engine to rev easier, and evidently has a good time supplying enough juice to keep everyone happy. You could probably keep your house completely lit up with the amount of spark you're getting from the new ignition system.

The stud kit, required on a modifi-

cation like this, will run a mere \$8.50. The labor charges, if you prefer to have Powroll do the work for you, will run \$25. We suggest that you install the studs yourself. As with any other Powroll product, the installation instructions

Continued on page 72

20. When installing the pipe to the cylinder head, tighten down both bolts evenly and gradually. The Powroll pipe will bolt right up to the existing mounts without any modifications needed.

21. The Super Trapp silencer is mounted by way of a hose clamp. We suggest that you use two clamps instead of one, just for security.

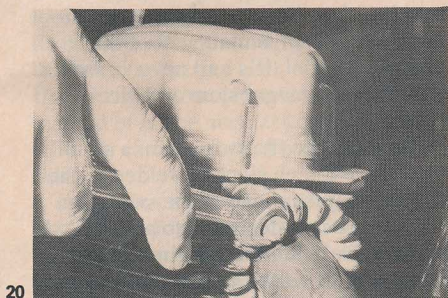
22. Using the proper bolt (and not a bent one), install the shift lever and countershaft sprocket.

23. Last to go on the machine is the gas tank and seat. With the 24mm carb, you can still route the throttle cable under the tank and have enough clearance for smooth operation.

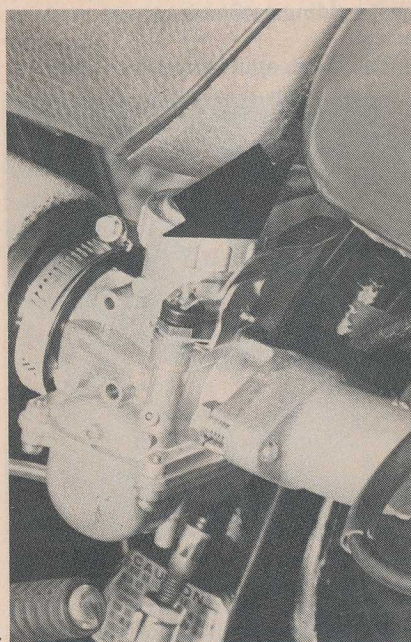
24. The only drawback to the bigger carb is the choke lever location. It's very close to the frame, and although it doesn't bind, it's hard to grasp.

25. With the exception of the carb and pipe, your engine looks stock. You'll fool them all—until the bike is fired up.

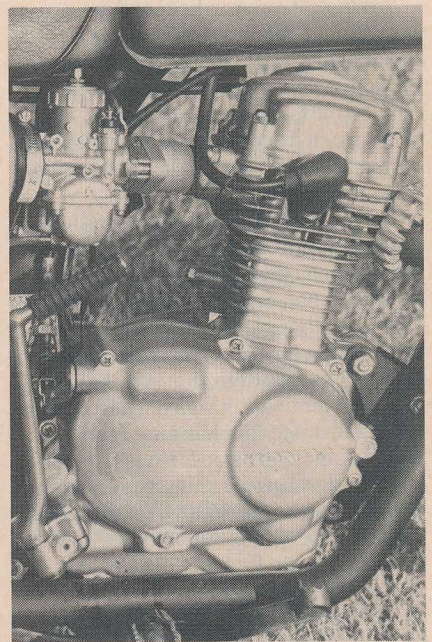
26. A stock little XR playbike was transformed into a 116cc fire-breathing monster. It's more than adequate for any racer in the power department, and can be quite a handful when you turn the throttle.



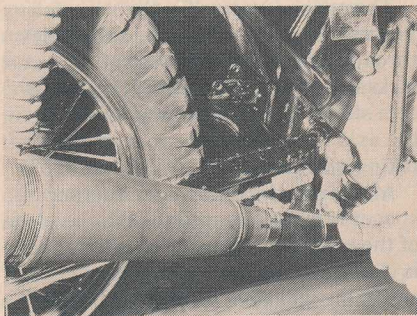
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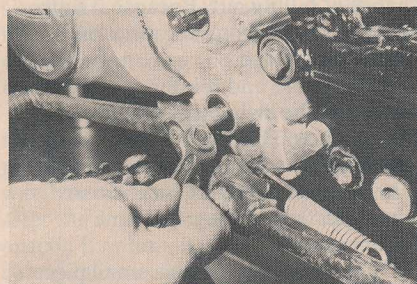
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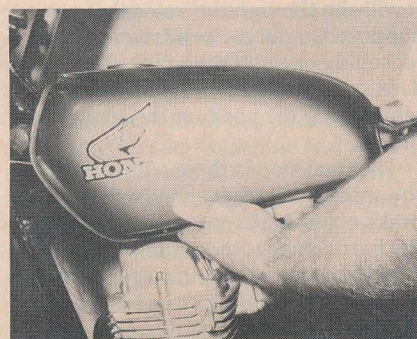
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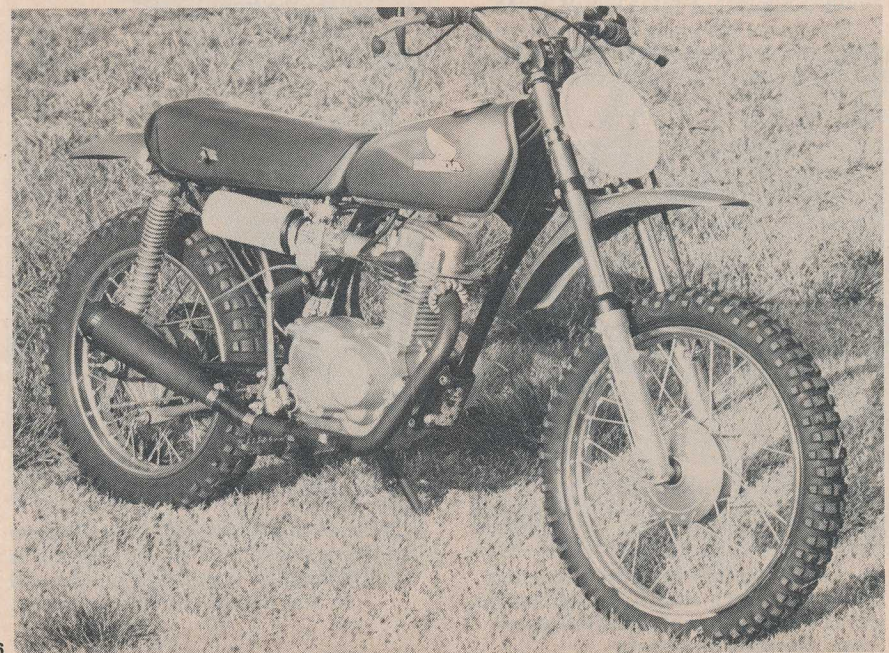
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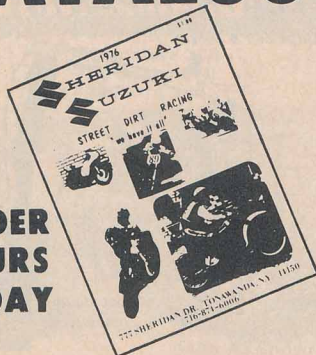
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116cc HONDA XR

included with the kit are almost fool-proof. Any rider, with the usual assortment of tools, can put the stud kit in easily.

There are a few things that Powroll would have to do in the labor department to get your engine up to a 116cc category. First, the crank halves have to be machined to accept the new parts. This will run you \$14.

Then the cylinder has to be bored out and precisely honed to accept the larger bore kit. This will cost \$35. We suggest that if you're planning on getting the 116cc kit, you let Powroll perform these two stages of modifications by sending them your stock cylinder, head and centercases. They know what they're doing, it's their kit, and you really can't afford to have someone botch the thing up after you've laid out the bucks for the parts.

If you're tired of taking your engine apart and putting it back together a zillion times, Powroll will completely assemble the unit for you for \$95. This includes everything it takes, except the engine oil, to get your stock XR 75 up to the 116cc kit. All that would be required of you after you receive the engine back in the mail, would be to check the timing, pour the oil in the crank, throw the engine into the frame and ride off into the sunset—probably in a bodacious wheelie.

You can buy the total kit, including all the parts listed here, for a lump sum of \$540.10. Or you can go the piece-by-piece route (which we don't suggest at all) for a complete price of \$572.30.

Like we said before, that's a pretty tall price to pay for engine modifications of a motorcycle that probably cost you about \$600. But when it's done, you're not going to believe the results.

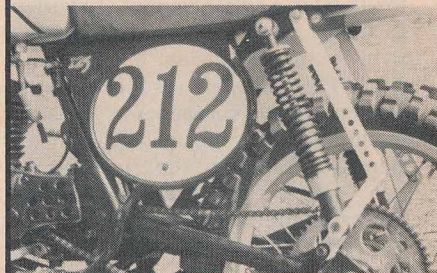
When trying to explain to some friends how well our engine works now, we found that very few of them believed our description of the increase in torque, horsepower and rpms. After they got a test ride on the bike, they were convinced. Everyone who has ridden our Powroll XR 116 says about the same thing. "Good Lord, that thing is so fast it's incredible!" We just smile and nod.

So, if you're tired of putting on a few components at a time to get a little bit of performance increase, and want to just save up the pennies and go the whole full-blown route, this is the way. We guarantee that you'll be amazed at the results, and you'll find that the bike will stay together just as long, and probably longer, than the stock motor did. Most importantly, never, we repeat, never will anyone else, with a bike that isn't modified exactly like this, be able to keep up with you.

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AND YOUR BUCKS!!!**

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using the Skunk Works GP* Suspension
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