

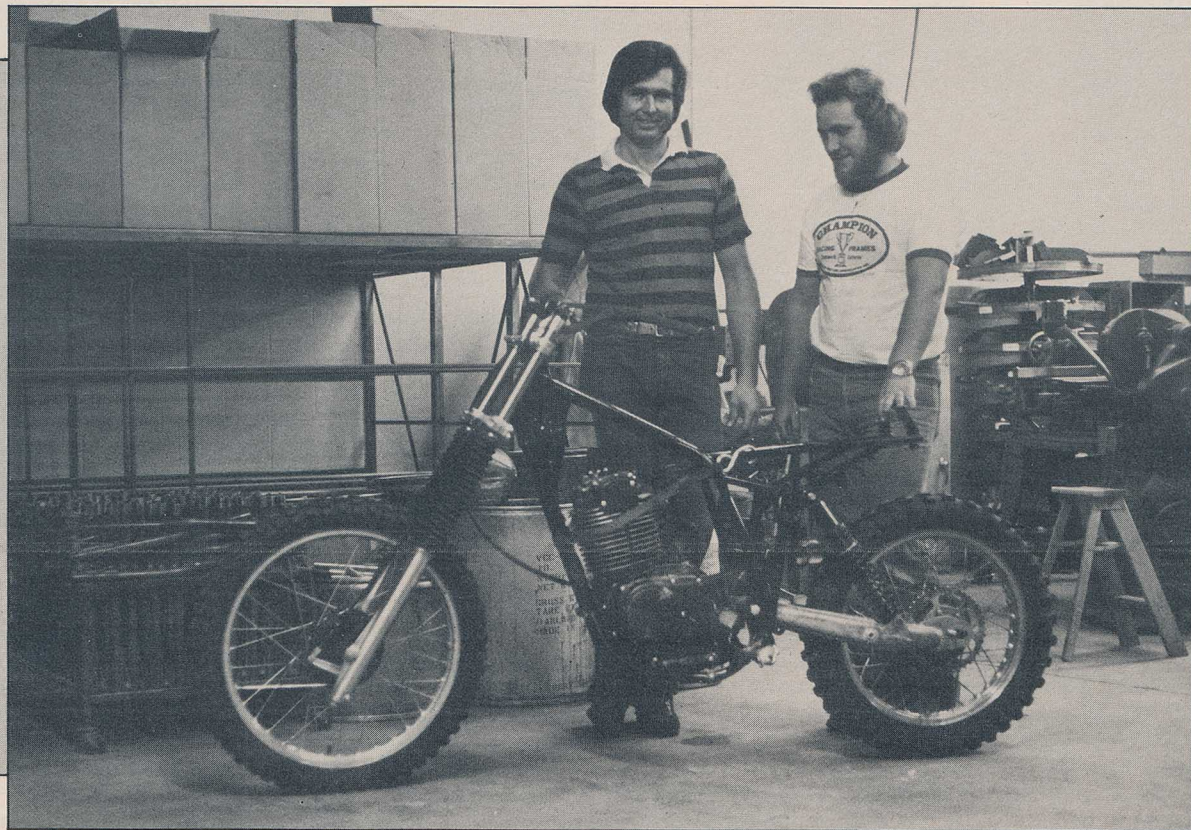
Project DR370 Suzuki Part II

I WAS FRAMED! I TELL YA, FRAMED!!!

In which we get in completely over our heads, only
to get rescued by Champion Racing Products

By the somewhat humbled Editors of Dirt Bike

(With special thanks to Mike Konle, who probably
will never talk to us again)



Project DR is flanked by Mike Konle (striped shirt) and Tom Cassese. Both men stayed up until the wee hours to salvage our mistake.

Boy! Did we step in it. Right up to the old eyeballs. And it all looked so simple, too. Remember that test we did in the last issue of DB on the Suzuki DR370? Yeah, that's the one.

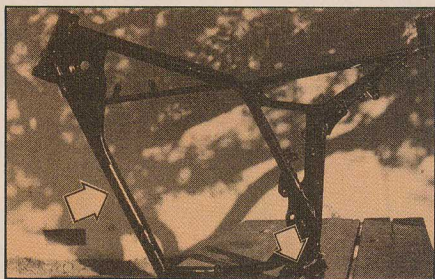
Well, in that test, we had the first part of the Project DR370, in which we worked on the bike some and made it a bit better. We also stated that we had elaborate plans for the DR, as we had

gone as far as practical in the bolt-on modification department. Our next step was to be the installation of the mellow four-stroke engine in an RM frame.

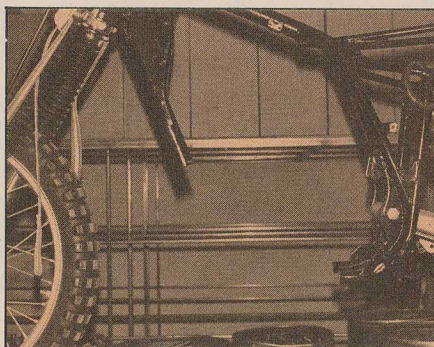
We chose the RM frame for a number of reasons, among them being the fact that it looked like it would be an easy job and the use of that frame would allow us to use lightweight RM parts.

Keep those words "looked like it would be an easy job" in the back of your mind. And whenever you get the urge to try some sort of exotic engine/frame swap, reread this article.

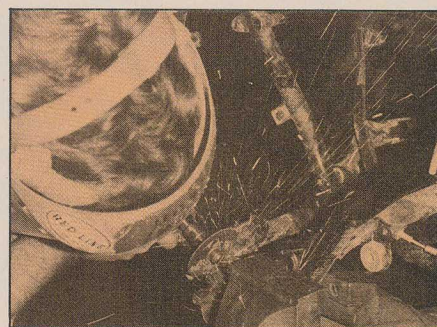
Now, let's tell you why we *thought* it would be easy. We got the DR370 out and stood it up against a wall. Then, we stood an RM up against the same wall and whipped out our tape



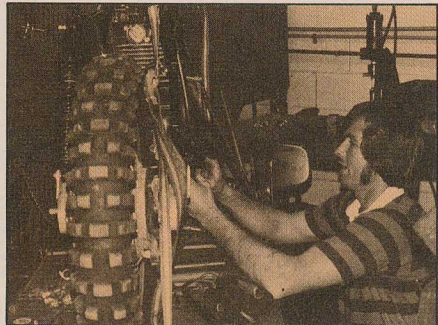
Here's the stock RM (1978 C-model) frame. The arrows show where we cut a section out and replaced it with a DR section. Don't try it.



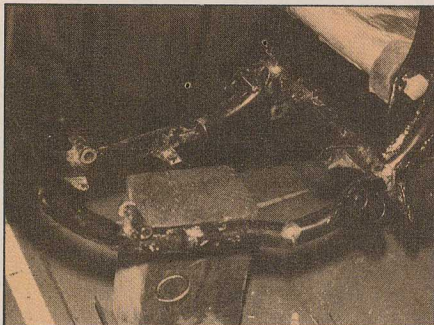
After the surgery, here's what faced us.



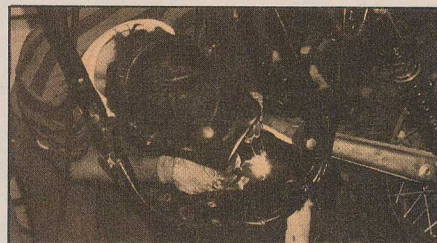
We cut a section out of the DR, measured it, re-cut it and so on.



Constant measuring and double-checking is a necessary part of any frame swap.



Here's the basic weld. This cradle consists of sections from both frames and several handmade pieces.



The hardest piece to make was for the bottom rear motor mount. Clearance was critical. A half-inch either way would have meant that the engine could never have been removed, or the chain would saw the new mount, or maybe it would even be OK. Gaki!

measures. After 20 minutes of eyeballing, taking notes, measuring and chin-scratching, the entire staff of DB agreed that "it would be a snap."

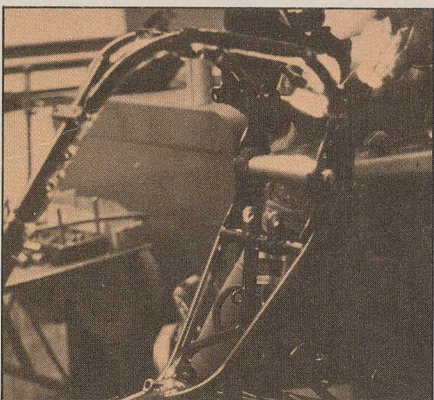
After all, we reasoned, the downtubes were the same diameter, the bottom cradle tubes were the same diameter, the width at the pegs was identical and enough other distances (from point to point) were virtually the same.

We figured that we'd merely take the entire bottom section of the DR frame out, cut a piece out of the RM to make room, weld the whole works together, then slip the engine in when it cooled down. We knew that there was plenty of space in the RM frame for the DR motor. Hell, any fool could see *that*, even without a tape measure.

Still, something in the back of our little pea-brains told us that we should seek out the advice of a pro. So, we talked to Mike Konle, the owner of Champion Racing Products. They make some of the lightest, strongest and best-handling chassis around for everything from Harley 750s to Yamaha TT500s.

We set up a time and met Mike at Champion, with the DR and a brand-new, shiny RM frame. We had even gone ahead and cut a small support tube out of the RM frame and had the DR engine laid on the rails to show just exactly how easy this whole thing was going to be.

The first thing Mike said was: "You see that little tube you cut off? Well, unless you put it back in, your frame



The last few welds. When we were all done, careful rechecking showed that alignment was spot-on.

will break right here. Exactly here." With that, he pointed a Number Two pencil at a spot.

Hmmmmph, we thought.

We rolled the whole works inside, and set it up on a neat hydraulic work stand. More measurements were taken. We heard Mike mutter under his breath. Cuss words echoed through the Champion facilities. Then, adding insult to inference, Mike turned and said, "Good Lord! This thing is a disaster. It would be easier for me to build you a fresh frame cold-turkey, than to try to match these components up."

We put on our best editorial face and replied: "Mike, the whole idea behind this project is to get a valid tech article that'll help a reader do the engine swap all by himself."

"You want to *what?* Listen, making a successful transplant consists of a lot more than just getting the pieces welded together and the engine somewhere in the middle. Sit down and listen."

We sat. And listened.

Mike went on and explained how the location of the countershaft center in relation to the swingarm pivot was the single most vital point in a transplant. If you don't get that right, then you'll end up with an abortion for a finished product.

As the DR370 was designed stock, the countershaft sprocket was a long distance from the swingarm pivot point. However, because the DR had a bit less than six inches of rear suspension travel, this was not a critical factor. When you tried to add travel to the stock bike, the problems started.

It seems that the longer the travel, the closer the countershaft must be to the swingarm pivot point. That's why bikes with very long travel and old-style cases had a whole bunch of chain problems.

Not only is closeness a critical factor, but the actual location from a level plane is important. The mid-range of the suspension travel is the key to the whole works. For any setup to work properly, the countershaft center, the swingarm pivot point and the rear axle must be in a straight line with the suspension collapsed to exactly half travel. Once

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PROJECT DR370 SUZUKI

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that is determined, the location where the engine must sit in the frame is established. Any other place in the frame, and the bike simply will never work to its full potential.

The way we had originally planned to install the engine would have resulted in the chain sawing on the bottom of the swingarm at the pivot point. Clearly, this would have been grim. Chain life would have been poor. The countershaft would have been placed under some horrible loads. We would have chewed the swingarm up in no time at all. We were headed for DNF City.

Mike simply did not want to do a hatchet job on the bike. He said that he *could* do the job, but that it would not be pretty. Too many welds. Too many short pieces tacked on to more short pieces.

We wheedled, sniveled and groaned, and finally got him to at least give it a try.

He agreed, but asked us not to say that Champion did the work. We agreed. We promise never to mention that Champion did the job.

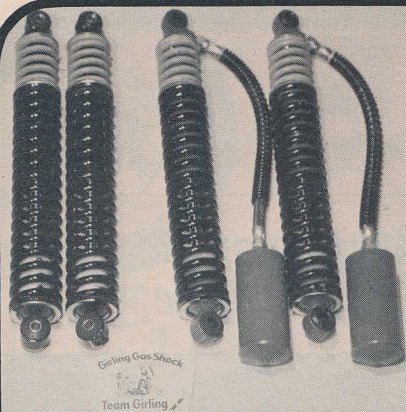
After we sawed a chunk out of the RM frame and held the DR frame up against the gaping hole, we started to see the stupidity of our choice of swaps. When the countershaft location of the engine was in the correct spot, the frame didn't line up at all. When the frames lined up, we ended up with the countershaft location grossly high in the air.

To get everything right, Mike was forced to use sections out of both frames. Two inches of RM here, three inches of DR there. A tab from a DR, a mount from an RM. And to top it all off, special sections had to be fabricated from scratch.

All in all, the whole damn thing was so time-consuming and difficult to do, that the average rider stood about as much chance at completing this project, as he had at playing 18 holes of golf on Mars.

Still, when all the smoke cleared, Mike had done a super job. We had the engine in the right spot and the welds were clean and strong. Too many of them to suit Mike, but a strong job nonetheless. If we'd gone to anyone with less experience than Champion, we'd probably have ended up with a freak bike.

As it stands right now, we're going to have 11-plus inches of ground clearance with ten inches of travel, front and rear. Surely enough to make everyone happy. And, with a little luck, we'll have a sub-230-pound, race-ready four-stroke. Champion Racing Frames, 20105 Nordhoff St., Chatsworth, California 91311. □



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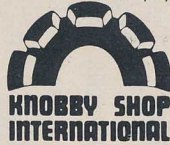
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