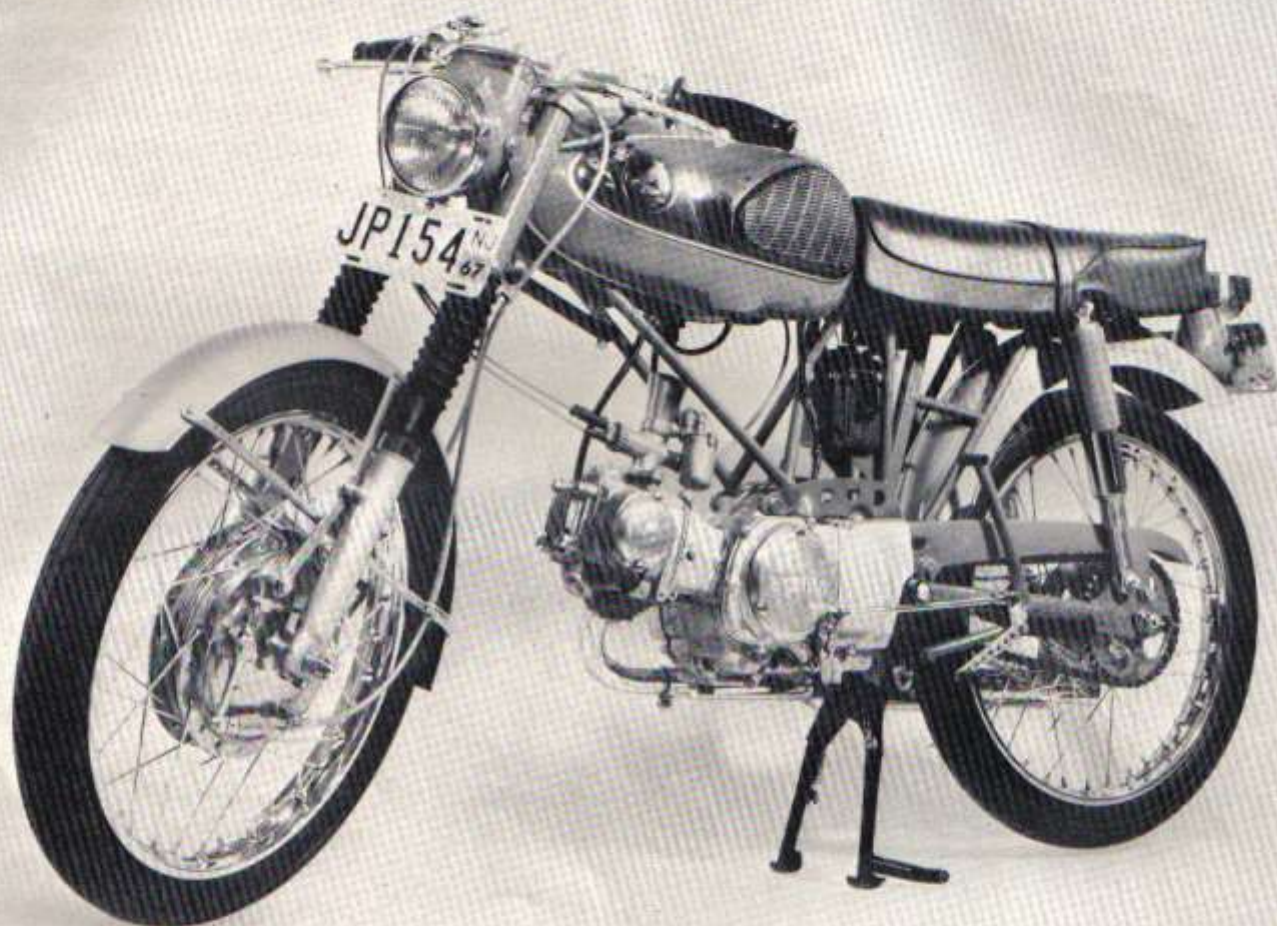


ONE MAN'S HONDA HOP-UP



Frame redesign and CB160 brake laced into stock S90 wheel are two "total-performance" modifications incorporated into this spare custom gem.

The decision to tear down, redesign and replace some important elements of my Honda S90 seemed ludicrous and reactionary. Much as I liked the overall concept and performance of my little one-banger, I was not enamoured of its strong, durable, homely and inexpensive pressed steel frame. If it acts like a motorcycle, it should look like a motorcycle! Yeah!

In retrospect, the last 300 or so hours (spent in giving birth to and mothering a custom motorcycle) have certainly given more pleasure than pain. If I'm glad the project is finished, it's only because I'm once more on the road.

My first move was to price a new S90 factory frame. It was necessary to cut the old frame up for bits and pieces and if I were to have second thoughts

halfway through, I wanted to be sure that I could afford another strong, durable, and inexpensive pressed steel one.

After recording all pertinent measurements, the lower portion of the Honda frame seemed the best place to begin.

Located in this box-like affair are the engine mounting holes, rear swing-arm pivot, muffler bracket, center stand pivot hole, attendant rear brake pedal and bracket for stoplight switch.

This portion of the frame is spot welded to the upper half; "easily" removed by drilling out the welds. The subsequent drill holes were then filled by brazing with a slow flowing nickel-alloy rod, ground down and sanded smooth.

The tubular portion of the frame was designed and fitted to this lower frame

member. The bits and pieces removed made fitting of tank, seat, rear fender and shocks much easier. I had hoped to use the steering head tube, but found it unsuited to my purpose.

A friend provided enough angle iron to build a rigid jig to hold things together prior to welding. In all honesty, other than the cost of .20 guage mild steel tubing (5/8" and 1"), I spent more on plumb bobs and string. I can eyeball measurements with fair accuracy but I wanted one track not two on the pavement, so the plumb lines provided a precise center line for plotting accurate measurements.

Cutting, filing and fitting of joints was a slow but simple task. Care and accuracy being my watchwords; a new steering head tube (finished on a friend's

We step into a workshop to watch a young enthusiast tear apart his road-going Honda Ninety Sport And put it back together again as a custom super-swift, streamlined racing baby—by Stuart Davis

lathe) was very carefully joined to the frame and fillet brazed to insure maximum strength. Visions of Mrs. Davis' son learning to ride a unicycle at 60 miles per on route 80 were a lesson in hair-raising terror.

The original factory frame ran a bit over twenty pounds. Our finished and painted frame provided a weight-saving bonus of six pounds. Lacing a CB160, double leading shoe brake assembly into the S90 front rim added only five pounds more than the stock counterpart, so total weight matches production machines. Had any experience lacing wheels? Good Gawd! Now there's a thrill.

Fitting a hydraulic steering damper was almost an afterthought. But, late or not, a modification of merit. Aside from the its virtues at speed, the damper eliminated the annoying flip-flopping of the front wheel when raised on the center stand. Adding a Ducati throttle assembly, early Super Hawk flat bar, Yamaha battery strap and VW toggle switches allowed completion of this international machine.

Winter and its attendant snows had by now, smothered our part of the world; there was nothing to do but bury ourselves in the warm, cozy shop and turn our attention to the alteration of the powerplant.

With considerable wailing and gnashing of teeth I decided to leave bore and stroke as is, to concentrate on better breathing and more revs. Now for the tech-tips part; replacing the stock cam with Harmon & Collins track grind #7223 billet, automatically advances valve timing 32°. The cam sprocket must be moved rearward one tooth (in relation to the timing chain) providing thirty degrees of retard. Using two degree retard offset buttons on the cam, which must be ordered separately, allows timing to conform to manufacturers specs.

It became apparent after the above modifications, that the piston will overtake the exhaust valve on the exhaust stroke. A fly cut on the piston crown to a depth of .075" provides the necessary clearance. The only other variation concerns timing figures. It is obvious that the opening figures are correct but closing figures do not match manufacturers specs even closely. H&C's timing tag gives 51° for intake closing and 25° for exhaust closing. My figures were 87° for intake and 65° for exhaust.

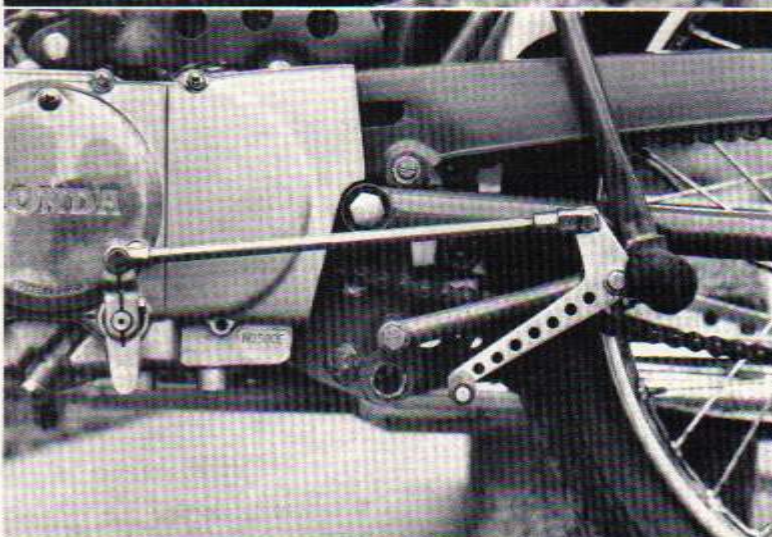
3 VW toggle switches are custom touch to the stock headlight nacelle. An early Super-Hawk yielded the low bars



D'ell Orto 24 mm carb fits right between the new front down tubes.



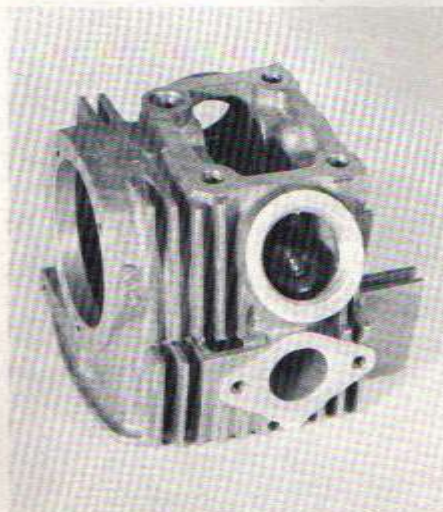
New mounts have been fabricated so that pegs and shift linkage are rear-set.



PHOTOGRAPHY BY THE AUTHOR



The above photo allows a clear view of the frame layout. Joints are brazed and file-finished, the new frame weighing in six pounds lighter. A brand-new steering head tube and a hydraulic steering damper are other changes. The photo below shows the polished and enlarged intake port.



My only conclusion is that the timing tag numbers are misprinted.

The intake and exhaust ports having already been enlarged and polished, we then thinned down, polished and re-installed the rocker arms. So much for the internals.

I had planned on mounting a larger Honda carb but found that the larger unit would not fit in between the front down tubes. A 24mm Dell'orto fitted with very little fuss.

After playing mother to needles, jets and throttle cutaways, I find engine performance excellent and starting uncomplicated. The use of choke is quite unnecessary although it proved useful as a tuning aid. Two tickles of the float plunger and engine fires to a wonderful

round idle. After 6000 rpm she begins to pull nicely and approaching 11,000 revs screams like a demon pursued. Main jet size is now smaller than that found in the stock 20mm carb and my engineering peers tell me that indicates better volumetric efficiency.

The ride is all I hoped it would be. Handling is on par with the production machine. Cornering is excellent with very slight understeer. Firmer damping would be an advantage, as it would be on production equipment. No doubt I'll allow for shorter, firmer shocks on my second chassis.

Astride this diminutive racer on winding back county roads, I'm reminded between shifts, that this is one of many paths to glory, Yeah!