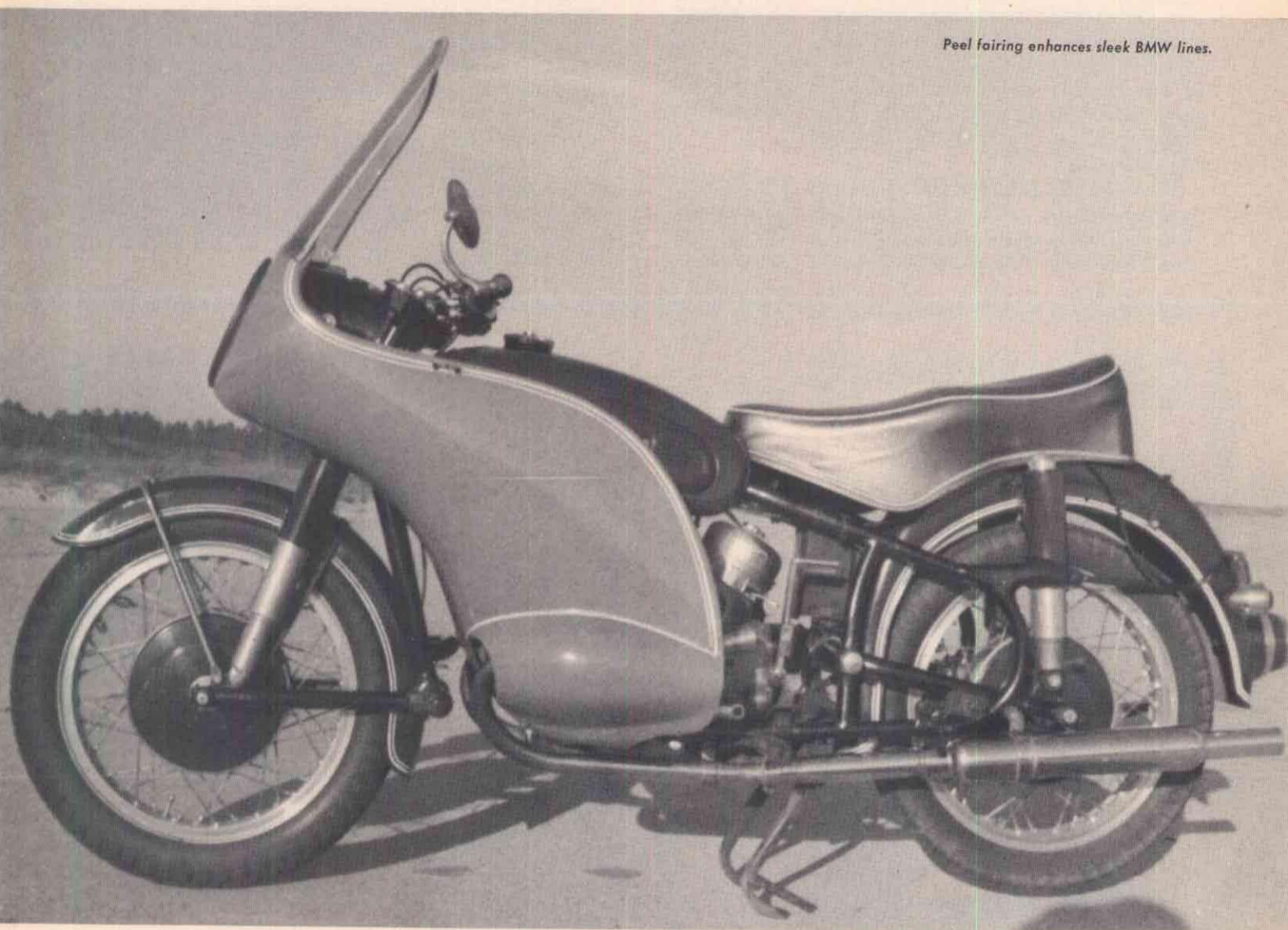


More **GO** for the **BMW**



Peel fairing enhances sleek BMW lines.

750cc kit heads list of speed modifications

MODIFYING THE BMW

The automotive speed equipment industry does a practically negligible business with products for the Rolls Royce. Likewise, in the motorcycle field hop-up goodies for the staid BMW are few and far between. However, BMW owners are for the most part just like the rest of us; they want to squeeze from their machines all the performance available. Some of these fellows are not content to limit their efforts to precision tuning but seek also to increase the power output above the level originally intended by the manufacturer. Now there is a firm specializing in such modification: **Cycle Sport-Racing Parts, Inc.** of Pensacola, Florida.

Since Pensacola is in a somewhat remote location having no electronically timed dragstrips or dynamometers, the men from Cycle Sport-Racing Parts, were restricted to tedious trial and error in developing speed parts. But the end result is that all the "bugs" have been worked

out and now performance of the experimental BMW's is just short of phenomenal.

There are many routes from which to choose in the pursuit of more power. The following step-by-step account tells how one particular used BMW (with 63,000 miles on the speedometer) was expertly "worked over" to increase its rapidity. Later, we discuss the why's and how's of upping displacement to 750cc (from the stock 600cc) through the use of a specially designed kit.

A Case History:

STEP #1:

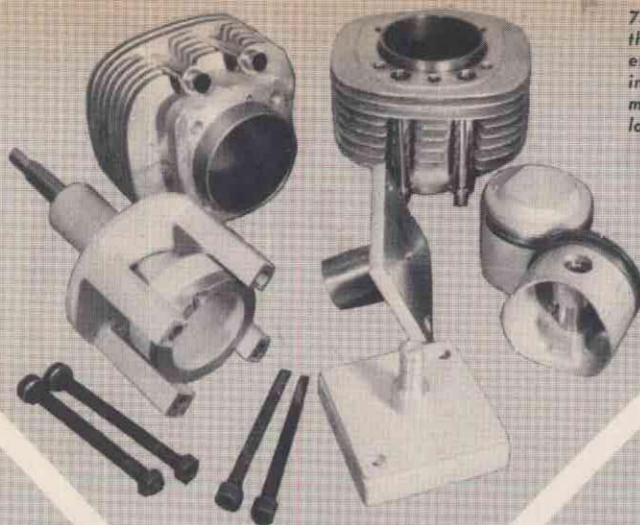
9.5:1 pistons installed; Bore 73mm. Clutchspring from R69S installed.

STEP #2:

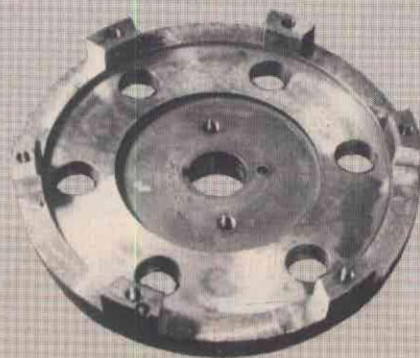
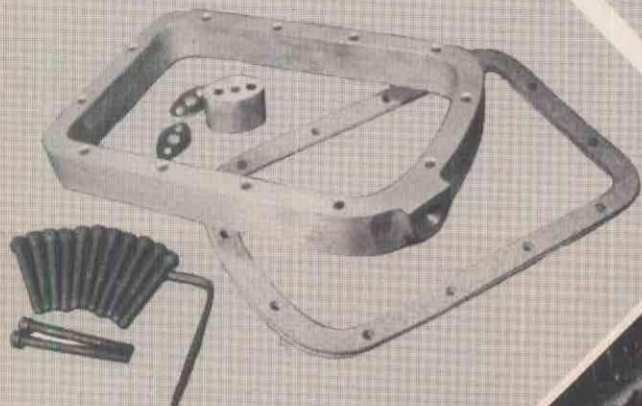
Installed two 30mm Dell 'Orto racing carbs with separate intake flanges. Intake ports were flared out, stock valvesprings were shimmed about $\frac{3}{32}$ ".

CYCLE/OCTOBER 1965

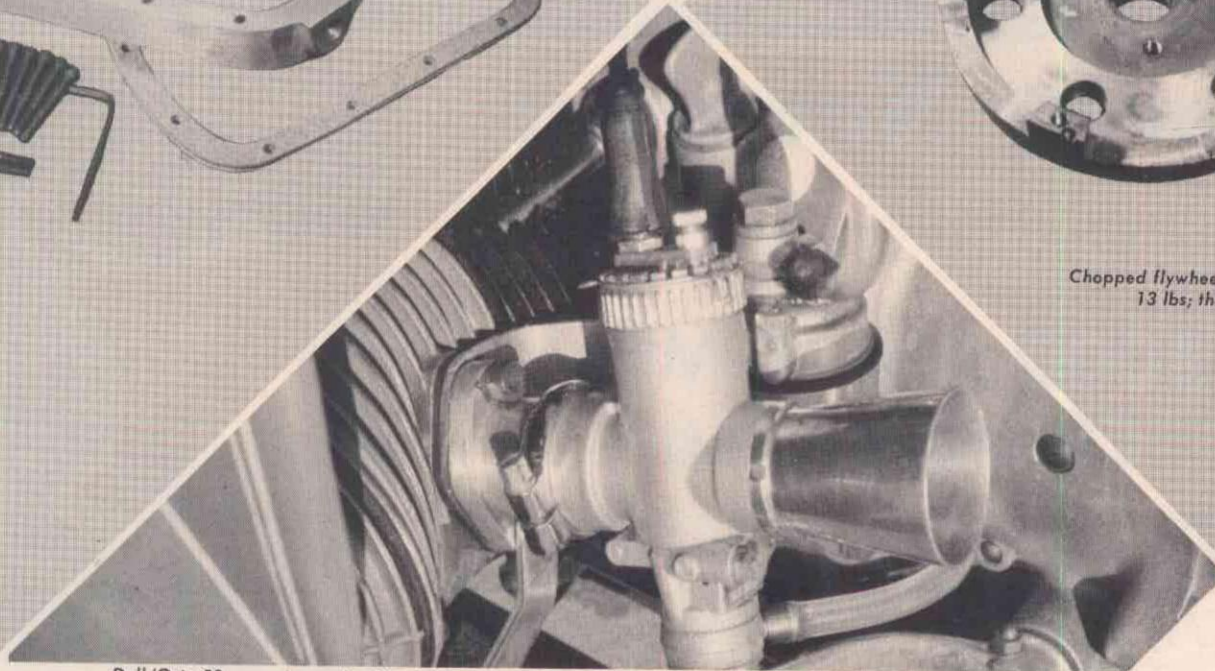
This kit allows increased oil capacity. Oilpan spacer, oil pickup unit spacer, gaskets and fastenings and even the Allen wrench are supplied. Tapped hole at front is for oil temperature gauge.



750cc kit and special tool kit that enable modification with engine still in frame. Plate in center of photo is used to mount cylinder heads in lathe for boring.



Chopped flywheel. Original weighed 13 lbs; this one tips the scales at 7 lbs.



Dell 'Orto 30mm racing carb with separate float and intake stubs.

Either these or integral types are available. These carbs give a substantial performance boost.

STEP #3:

Peel fairing fitted (touring style). Acceleration tests showed marked increase with or without fairing. Top end greatly improved. (Speedometer needle "buried.") A VDO tachometer (2,000-10,000 rpm) was installed and it showed the speedometer to be slightly optimistic. With a rear end ratio of 3.18:1 and final drive of 4.89:1, the BMW turns 8,000 rpm in top gear. This equals about 124 mph. Not bad for the small amount of work involved!

STEP #4:

Suspension modifications were made to coincide with power increase: Front shocks were filled with light oil instead of hydraulic fluid for added stiffness. Stock suspension springs were replaced by ones for the BMW sidecar model. These are readily available from any BMW dealer.

STEP #5:

Flywheel chopped. Stock flywheel weighs 13 lbs., new version, 7 lbs. and is a considerable improvement. About $\frac{3}{32}$ " was removed from the forward face, starting $2\frac{3}{4}$ " from the center and working outward. About $\frac{1}{8}$ " was removed from the periphery across its entire width. (Timing marks must be re-scribed on the undisturbed face of the flywheel. Some metal was also removed from the area around the screw holes of the clutch assembly. The surface was chopped to within $\frac{3}{16}$ " where the clutch spring rests. Further, six holes were drilled through the flywheel ($\frac{13}{16}$ " centered $2\frac{1}{16}$ " from the axis. Even more metal might have been removed. This machining is expensive, but the effect is rewarding; much horsepower is gained from the fact that the engine has less work to perform in overcoming inertia from the heavy flywheel during acceleration.

NOTE:

It must be remembered that the machine being modified in this case had many miles on it, thus some servicing was necessary to compensate for general wear. Bearings were replaced in the gearbox. Crankshaft, pistons, cylinders, wristpins, camshaft, valvegear and rear end were carefully examined and were found to be in good shape. The woodruff key on the transmission output shaft had sheared some miles back (probably because of too much popping of the clutch) but the output flange was not slipping on the shaft.

STEP #6:

This step has not yet been completed, but is expected to bring further improvement to performance. A 2.9:1 rear end is to be installed dropping engine speed 10% in relation to road speed. With all

Continued on Page 68

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More **GO** for the **BMW**

Continued from Page 31

the power on tap, this should not detract from acceleration. In addition, a 19" rear wheel rim is to be employed with corresponding proper tire.

***Important note:** At 59,000 miles (prior to modification) it was noticed that at about 6,000 rpm during night driving the lights would flicker and drop in intensity. Also, the engine was noisier than normal at idle and low speeds.

The engine was torn down completely to investigate the possibility of too much crankshaft flexing. The rear main bearing was found to be loose on the crankshaft. No other troubles were found, although wristpin bushings were replaced as a matter of routine. A slight knurl was put on the crank and the new bearing installed. The light flicker was eliminated.

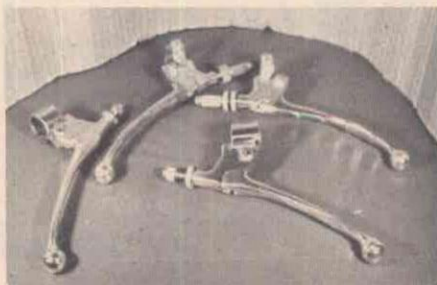
It should be stressed that it is important to check all fits and dimensions prior to modification. A normal engine is far more tolerant of minor inaccuracies, but dimensions and fittings on a "hot" mill must approach perfection.

750cc KIT:

For those seeking an abundance of low speed power and torque, with a minimum of low speed gear changing, the 750cc kit is the answer, especially for pulling a sidecar or for heavily laden long distance trips. This kit is specifically designed for these purposes. It increases torque and corresponding horsepower while keeping rpm's down. In fact, the manufacturer has placed a 7,000 rpm limit on BMW's so equipped. A quiet, deep-throated power output is characteristic of the 750cc engine.

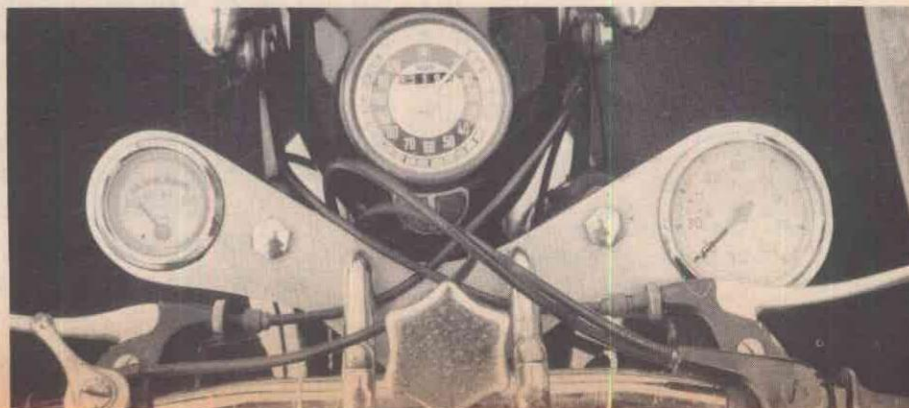
The kit is also available for the 68mm stroked 500cc machines, giving a new displacement of 684cc with a bore-to-stroke ratio of 1.175:1.

Even the 250cc singles could be raised



Two types of ball-end levers are available; either male or female pivot. The male type can be made to fit standard BMW control mounts with some filing.

Custom made instrument mounting with oil temperature gauge and tachometer.



to 342cc, but this would necessitate a costly balance job and the kits are not available in halves, anyway.

With standard breathing and carbs, the 684cc and 750cc BMW's may be expected to experience a horsepower gain of approximately 25%. By using the large 42mm intake valves, a sport cam, 30mm Dell 'Ortos and several other refinements, a much greater gain may be expected.

Formula H autos using BMW engines modified in a similar manner but with 700cc are pumping out 70 horsepower, which should give some indication of the power potential available.

DETAILS of KIT:

The 750cc BMW kit contains the following:

Cylinders — new aluminum alloy with replaceable grey cast iron sleeves

Pistons — 80mm, standard compression ratio 7.3:1. Pins, rings and gaskets included. New pushrod housings, ready mounted.

Kit is available for both 500cc and 600cc engines. Stroke remains standard, bore is increased to 80mm. First overbore is 80.5mm, second overbore 81mm. 500cc machines are enlarged to 684cc, 600cc machines enlarged to 735cc. Second overbores give 700cc and 750cc respectively.

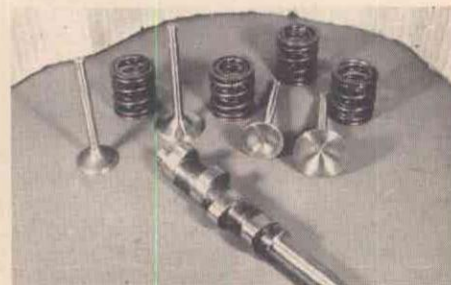
Standard pistons are 7.3:1 ratio. 9:1 pistons are another \$30 a set. The 500cc bikes do not require the high compression pistons, as the standard pistons deliver about 9.5:1 compression.

The R69S clutch spring and air cleaner must be used. Larger intake valves would also help, but are not required.

The receptacle holes in the block and heads must be enlarged to 86mm. This is accomplished with the use of a special tool set (cost \$125) which allows the block to be bored without removing the engine from the frame.

Retail price of the kit is \$179 with standard pistons.

Those wishing further information should contact: Cycle Sport-Racing Parts, Inc., Dept. Cy, Route 1, Box 720, Pensacola, Florida 32507.



Big 42mm intake valves for R69 and R69S models with standard exhaust. Stiffer valve springs (175 lbs.) R50 and R60 models use 38mm intake valves with springs equivalent to standard R69S units. Hot camshaft is also shown, #RO 160.