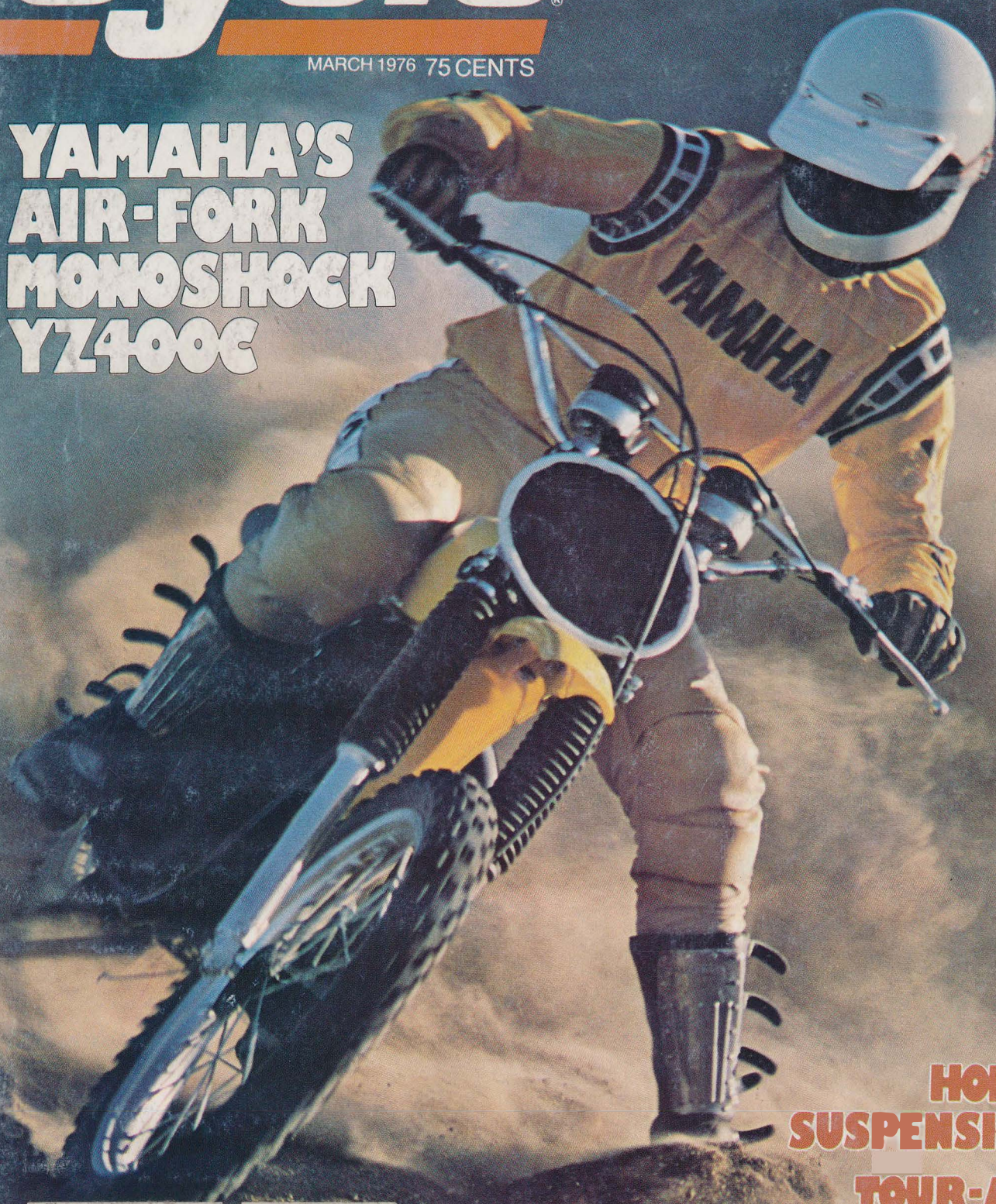


Cycle

MARCH 1976 75 CENTS

YAMAHA'S AIR-FORK MONOSHOCK YZ400C



**HONDA 550
SUSPENSION TUNE
TOUR-A-MATIC
MOTO GUZZI TWIN
HATE AND LOVE:
LAWSON 1000cc TRIPLE**

7-1592 KND 2706E096 641C APR77
1 KENDALL
2706 ENGLEWOOD
YAKIMA WA 98902
03

Cycle[®]

March 1976 Volume XXVII No. 3



p.28



p.50



p.36



p.75

P. Thomas Sargent, *Publisher*
Cook Neilson, *Editor*
Phil Schilling, *Executive Editor*
Dale Boller, *Managing Editor*
Gordon Jennings, *Portsmouth*
Jess Thomas, *Technical Editor*
Dave Holeman, *Associate Editor*
Margaret Beschen, *Production Director*

Paul R. Halesworth, *Art Director*
Teri Lamoureux, *Art Assistant*

Michael Shuter, *Contributing Editor*
Jim Greening, *Contributing Editor*
Kevin Cameron, *Contributing Editor*
Beverley Collins, *Editorial Assistant*
Bettina J. Costello, *Assistant to the Publisher*

Joe Mesics, *Associate Publisher*
Pamela Brown, *Advertising Assistant*
Edward J. Judge, *Eastern Regional Ad Manager*
Randy Pelton, *Midwestern/Southeastern Sales Representative*

John C. Kohr, *Western Ad Representative*
Linda J. Sutton, *Western Sales Representative*

Edward D. Muhlfeld, *Publishing Director*

This Month's Cover: Those lumps on top of the fork legs don't look like much, but they represent technology that may revolutionize motorcycle front suspension. Variable spring rates out of an air hose, after all, can't be all bad. Photography by Dale ("the Poor Man's Steichen") Boller.

Road Tests

- 28 Yamaha YZ400C
Industry's first pneumatic fork.
- 36 Moto Guzzi V-1000 1-Convert
Meet the Turbo-Glido-Slusho-Hydro-Matic.
- 75 Laverda 1000 Triple
Bucks-up price, buckboard seat, bucking bronco ride.

Features

- 44 Trendy Terminology
To make you a conversational giant. By Duane Bibby.
- 110 The Cafe Enduro
Just the thing for asphalt berms. By Dale Boller.

Technical

- 48 How Things Work: The Battery
Care and feeding of the humble plastic cube. By Gordon Jennings.
- 50 Product Evaluation: Lester Cast Wheels
Lighter? Some. Stiffer? A lot. By Jess Thomas.
- 53 Honda CB550 Suspension Tune
Or, how they do it in California. By Phil Schilling.
- 84 Product Evaluation: Marzocchi ZTi Fork
Grable aside, the best legs in the country. By Dave Holeman.

The Shop

- 89 Changing Tires
If you care about how your wheels look. By Jess Thomas.

Competition

- 103 Daytona Preview
Bet against Roberts—if you dare. By Kevin Cameron.

Departments

- 4 Editorial/Throw the Rascals In!/Cook Neilson
- 6 Letters/From the Top
- 12 Pipeline/Memories Are 7Rs/Jim Greening
- 20 Newslines/Some Worthwhile Stuff
- 24 Tips/Carb Sync
- 109 Cycle Test Index
- 122 Classified Ads/Goods And Services New And Used
- 125 Readers Service/How To Find What You Saw And Liked

A vastly improved front suspension which employs a new-generation hydro-pneumatic fork with eight-inch travel combines with detail changes in the Monoshock unit to provide a fitting chassis for the stronger and less frantic engine.

PHOTOGRAPHY: DAVE HOLEMAN, DALE BOLLER, PAUL R. HALESWORTH



YAMAHA YZ400C

● Yamaha seems to gradually develop each of their basic dirt bikes for a few years before they consider a particular model proficient enough to be called a YZ. Their biggest rock-slinger started off as a 360 Enduro and then shed cocoons through stages as the SC500 and MX400B before springing forth full-blown this spring as the fearsome yellow-and-black YZ400C. The 360 Enduro was a more muscular DT-1 and the SC500 was a monster in every way possible. A monoshock rear suspension system introduced long-travel to U.S. retail buyers with the MX400B last year, but the front fork failed to hold up its end of the bargain and engine durability suffered because of extremely short piston life.

Many concerted efforts have been lavished on the YZ400C by Yamaha's engineers and development technicians to cure the problems and shortcomings discovered during 1974 with the MX400B. Barely anything remains from last year's engine, except the engine cases and the basic magneto components. Yamaha's big two-strokes are relatively short stroke engines. The YZ400C's bore is 85mm and the stroke is but 70mm, for a bore/stroke ratio of 1.21:1. This mechanical relationship permits desirable design features such as a short overall engine height, plenty of room in the cylinder for breathing ports, and low inertial loads on the crankshaft at a given speed. As the MX400B engine was developed, however, piston life began to suffer drastically because there simply wasn't enough skirt area to support it properly. Winning cross-country Yamaha riders were replacing pistons after every race.

For this new bike, the connecting rod has been lengthened 5mm to allow room for longer piston skirts and reduce piston acceleration rates at top and bottom center, where the mechanical loads are highest. Additional piston support is provided by a bridge placed between the cylinder's inlet port and the reed valve charging port. Last year, these ports were a huge single hole. New crankshaft halves, piston, and cylinder castings accommodate design changes made necessary by the longer rod.

After our first outing on the YZ, the engine was fired up at the shop after the bike was washed. There seemed to be a lot of clatter coming from the lower part of the engine. While our bike was being serviced for delivery to us by Yamaha's technicians, one of the twin air cleaner elements had been treated with a new experimental spray can of filter oil; the other had received the usual 10W-30 engine oil. The experimental spray had dried and allowed a lot of sand to enter the carburetor housing. Our first thought was that the piston and/or crankpin bearing had been eaten by the grit. But disassembly and inspection showed that the piston clearance was well within tolerance at .06mm, and the connecting rod side-rocking clearance was okay at 1.0mm. As an additional check for rod noise, the rod was held at its upward limit with one hand while the top of the rod was tapped lightly with a plastic mallet. There was no click to contradict the rocking clearance check, so the top end was reassembled and the engine started again. The clatter was still there.

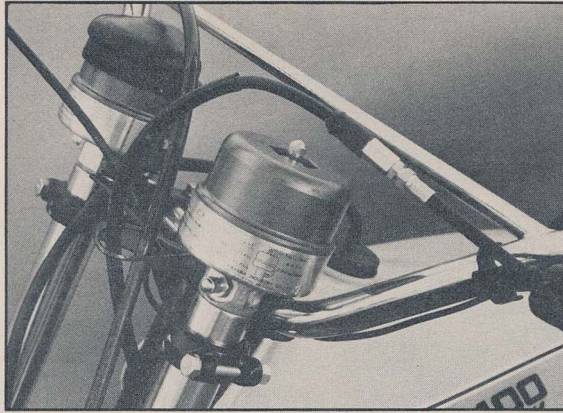
CYCLE

Cycle-Test

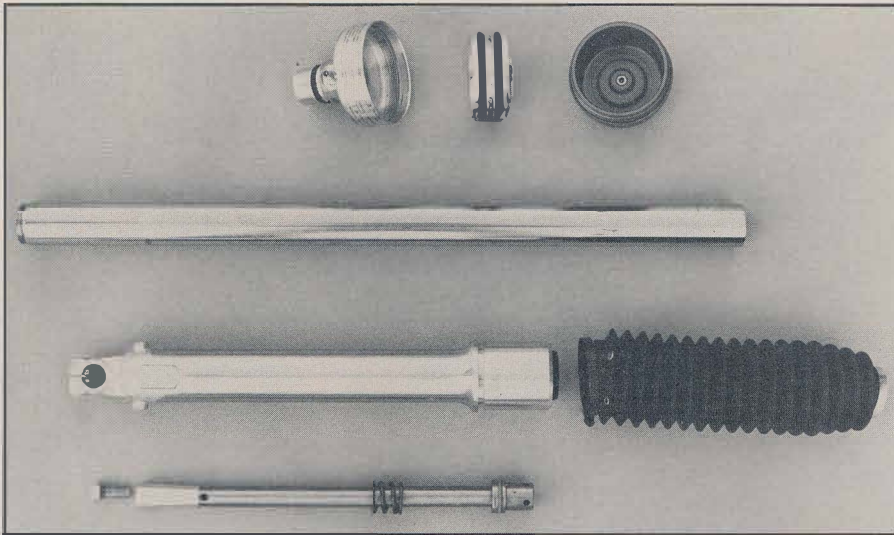
www.legends-yamaha-enduros.com



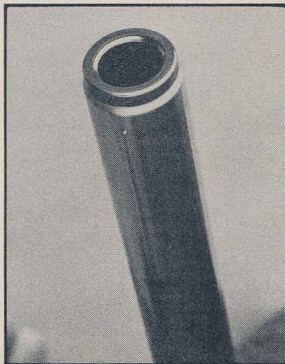
YAMAHA YZ400C



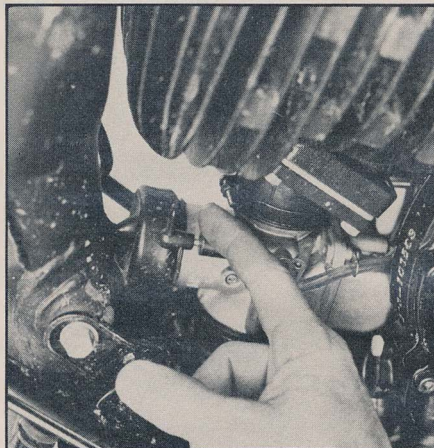
These cannisters contain air valve stems above and below double o-ringed floating pistons to provide two-stage air "springs".



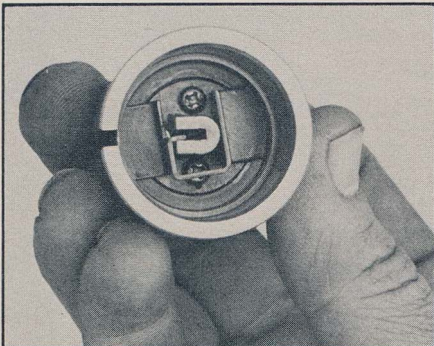
Cannisters replace caps in otherwise conventional fork legs. Special seals and forged sliders keep air in.



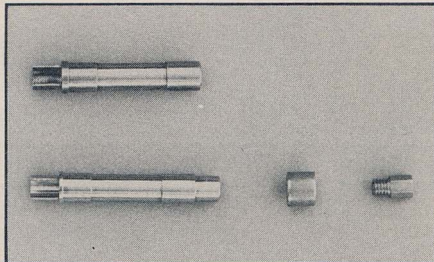
Damper cylinder is retained by rolling over end of fork tube.



Webco makes plastic duck-bill cap on Mikuni choke control post to ease glove d-hand use.



Needle positioning is made more secure with a retainer cap held to the slide with two screws.



Needle jet assembly has larger capacity and holds main jet lower in bowl to limit starvation.

Removing the primary case showed why. As a motocross racer, the YZ receives little in the way of design compromise that would rob mechanical efficiency. The silent helical primary gears in the MX400B have been replaced by spur (straight-cut) gears in the YZ. There was quite a bit of lash between the engine and clutch gears of our bike, and the clatter came from the clutch reacting to the irregular beats of an engine at idle. The noise diminishes when the engine gets good and hot, and is unnoticeable when the machine is being ridden.

An entirely new set of transmission gears are much stronger than those of the MX, but alter the internal ratios very little. There is only .07:1 total overall ratio difference between the two.

A new pulser coil in the magneto flywheel and related improvement in the CDI magic box combined to produce an ignition system which functioned perfectly throughout our test. We suspected that a random detonation problem in the MX400B was caused by wandering spark moment. We never heard the YZ's engine detonate once, even after sustained running up deep sand hills in the desert.

Detonation can also be caused by erratic carburetion. The 38mm Mikuni on our YZ had a modification made to its needle jet which may have shared in the detonation control. Until our experience with this carburetor, all the 38mm Mikuni racing carburetors we've seen used series 166 needle jets. The needle jet in the YZ is a series 247, 54.5mm long. The locating flange, just under the spray nozzle which sticks up into the main air bore, is 1.0mm thinner than the 166 piece, which lowered the jet in the carb body. The extra length comes from an integral extension on the bottom of the needle jet body where the main jet screws in. The passage inside the needle jet is drilled with a #28 bit to a depth of 38.5mm from the main jet end shoulder. The standard needle jets are counter-drilled with a #36 bit, which is only slightly larger than the needle jet orifice itself. The idea behind it all is to lower the jet in the float bowl and increase the volume of fuel above the main jet in the needle jet body. Apparently the extra volume of fuel damps surges in the metering column that cause sudden lean mixtures on rough ground.

Another new item in the carburetor is a slide needle anchor which is held down by two small screws. This neat trick prevents the needle and clip from accidentally being dislodged during quick assembly at the race track. The slide can still be removed by easing spring tension on a stamped cable retainer, but the screws have to be taken out to get at the needle positioning clip. The slide is a very heavy chrome-plated brass one that will wear very slowly, but may be the cause of other problems that will be discussed with the riding impressions.

The now-familiar three-piece exhaust system winds its tortuous way up the left side of the engine, crosses over the top of the cylinder head, and then makes a right turn before tapering back alongside the mono-shock assembly. The short U-shaped header pipe from the cylinder is a slip fit into the sleeves of the cylinder and expansion

chamber. Tension springs hold these pieces together securely and permit quick removal when it is work time. Rubber bumpers, attached to the pipe with heat-insulated mounts, prevent the exhaust system from vibrating against the frame. A new large fiberglass-packed muffler allows the YZ to comply with the more stringent noise regulations imposed by the sanctioning bodies this year. According to the hastily-conceived AMA test, where the sound level meter is held 20 inches to the rear and behind the end of the muffler at a 45 degree angle while the throttle is held to produce a constant 3000 rpm (for this engine size), the YZ produces an average 106 dB(A). The 50 foot ride-by test produces 95 dB(A). An additional kit supplied in the crate of each bike includes another tip for the muffler, a spark arrestor, choke plates for the air cleaner and alternative carburetor jetting. This kit brings the YZ into compliance with the 86 dB(A) limit for the states of Oregon and New Hampshire, as well as the off-road "green stickie" regulations in California.

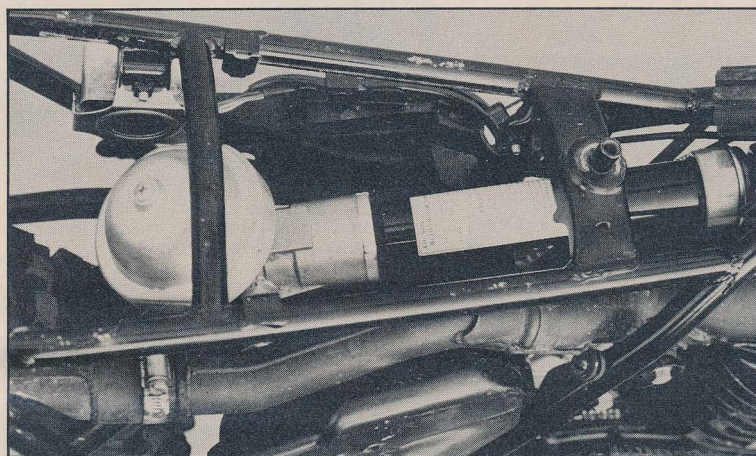
The kit is obviously an emergency measure on Yamaha's part: it reduces the power output by over fifty percent. We sincerely hope Yamaha's engineers catch up on their homework in the area of competition bike muffling before the Six-Day version of the 400C comes out this summer. Other serious manufacturers of these kinds of competition bikes have developed mufflers that are much more efficient.

An all-air front suspension system is the most remarkable new item on the YZ. Instead of conventional coil springs inside the fork tubes, compressed air is used to oppose and control shock force. To begin with, the new system uses a pair of 36mm diameter stanchion tubes. Last year it was discovered that 34mm tubes wouldn't stand up to the punishment allowed by the performance of the monoshock on the back. The new slider tubes are forgings that weigh barely a pound each and permit the front wheel a total of 8.46 inches (215mm) controlled movement. Entirely conventional Ceriani-type dampers fasten to the bottom of each slider; a double-lip seal and a soft scraper form the oil- and air-tight union between the sliders and stanchions. A two-piece aluminum alloy cannister is screwed into the top of each fork leg. Inside the cannister is a floating piston with two o-rings in grooves around its diameter. There are air filler valves above and below the piston: the lower valve controls pressure inside the fork stanchion, and the upper controls pressure in the small chamber above the floating piston. This floating piston arrangement is the breakthrough that allows this system to overcome problems associated with previous air forks. Because of the physical laws associated with such pneumatic systems, the resisting force to wheel movement got much too great before the total allowable travel was used. If a simple air chamber was added to the top, the initial force/distance rate was too high when the final rate was correct.

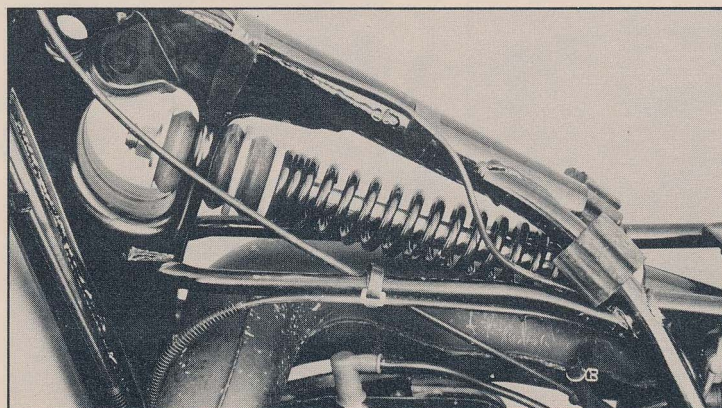
With the floating piston system, there are three separate variables for the compression force characteristics: the two chamber pressures and the oil volume. The standard



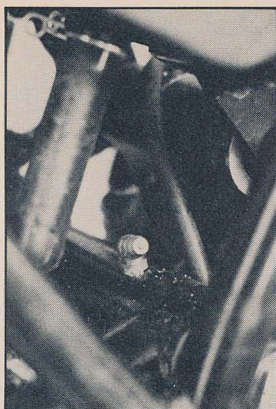
The YZ400C squats and leaps like a cat. Thanks to great suspension, straight-line stability is incredible.



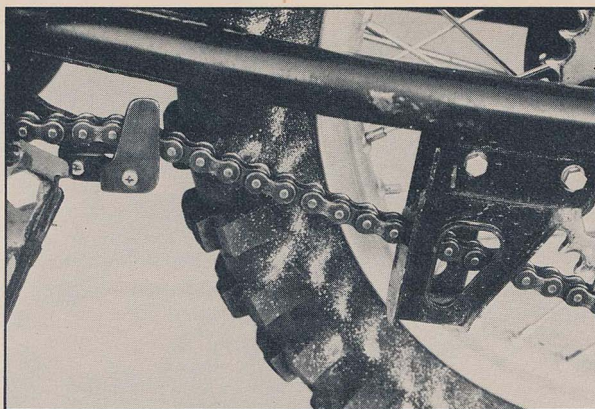
More oil capacity, improved valving, and longer stroke make Monoshock better this year.



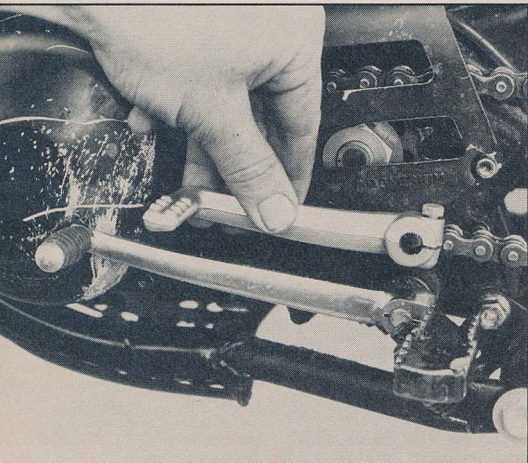
Small details such as insulating springs on cables and rubber bumpers on exhaust pipe and fuel tank make working easy. Monoshock spring pre-load is set with washers.



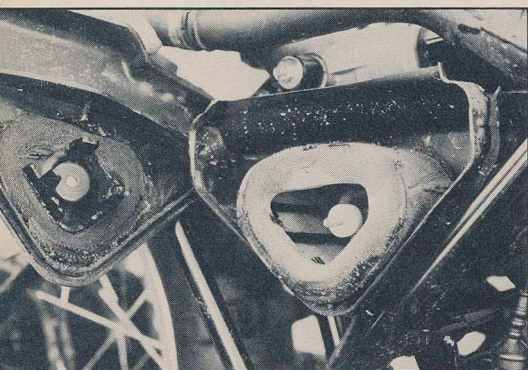
Genuine Zerk fitting on swing-arm pivot fits U.S. grease guns.



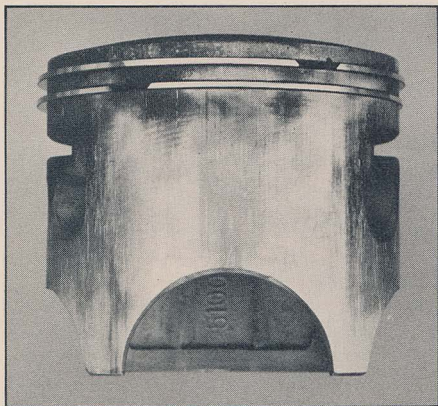
The spring-loaded chain tensioner and rear guide are necessary to keep chain in line and cope with huge amount of wheel travel.



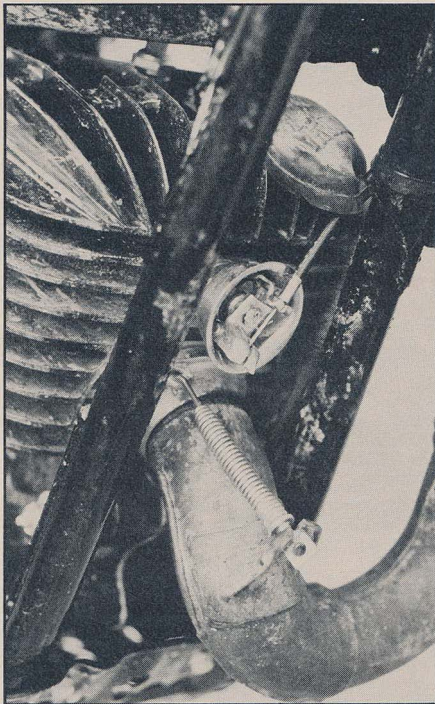
Replacing short standard lever with 2-inch longer one from Honda XL350 improved shifting.



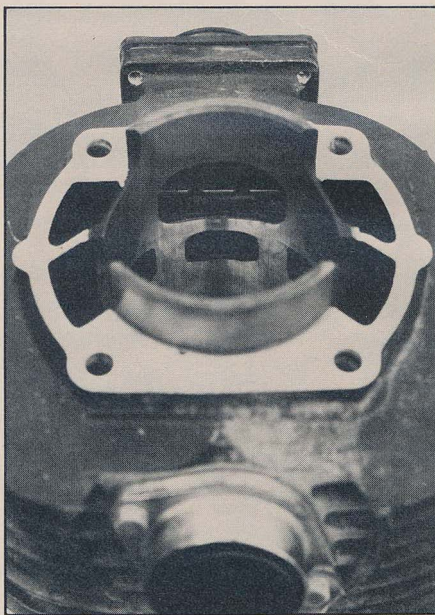
Twin air filters work perfectly if their cages are kept segregated and the edges are greased.



Piston life is increased with longer skirts and less cutaway for rear reed valve breathing area.



Compression release is operated automatically by kickstarter to make starting effortless.



Bridge between inlet port and reed valve area decreases breathing but gives better piston life.

figures listed in the owner's manual are 415cc (14.63 oz.) oil, 24 psi (1.7 kg/cm²) in the lower chamber, and 51 psi (3.6 kg/cm²) in the upper chamber. Within these three variables there is obviously an infinite number of combinations. Fortunately, desirable results are produced by a fairly narrow range of settings. If a rider likes soft suspension in cross-country riding, he'll like the same feel on a motocross track. For any given pressure setting and ratio in the chambers, a change in the amount of oil in the bottom varies the compression ratio of air volume to fork movement. More oil means the resistance to wheel movement gets greater sooner—just like changing the spring rate in a normal fork.

Setting the pressure in the lower fork chamber adjusts the initial force available to counter wheel movement, and is similar to adjusting the pre-load on a spring.

The top chamber acts like a safety valve. It acts to ease the rate of force rise in the bottom chamber. If the pressure in the upper chambers is set to twice that in the lower chambers, the floating pistons will start to ease when the sliders have moved half their travel. If the bike is being ridden on a course that is known, the top chamber pressure can be set to a lower-than-double point to provide maximum travel over the biggest bump. And in cross-country events the top chamber pressure can be raised to provide insurance against that oh-my-God that always pops up out of nowhere.

Maximum and minimum pressures and volumes are listed in the manual to guard the mechanical limits of the fork. Adjusting within these limits requires a few special tools and quite a bit of experimentation. Yamaha recommends that a hand pump be used to change the chamber pressures. We used a compressed air storage tank fitted with a Sears # 30HT16032 adjustable regulator. Yamaha's main concern is that maximum pressures not be exceeded with an unregulated air hose. The top chamber volume is so small that even a quick jab with a 120 psi hose would over-pressurize it. The Yamaha guys had a neat tool made up for adjusting the pressure. A good gauge was fitted to a filler attachment which had a retractable valve core depressor. The stem cap could be screwed on tight before the core was depressed. A second stem was in line between the gauge and fitting so that the pressure could be varied with a direct gauge reading. After the pressure was set, the depressor could be backed away from the fork valve core without letting any air out. The fitting was a Schroder # 2755. We found one at a truck supply house and made our own outfit.

Changing the oil level in the fork is relatively simple. A stand is required to hold the front wheel off the ground. After the air is removed from the bottom chamber, the whole cannister assembly can be unscrewed from the stanchion tube like a conventional fork cap. A large Crescent or smooth-jawed Stillson wrench works well. The Yamaha manual gives the oil capacity both in terms of volume and level distance from the top of the fully-extended fork tube. We found it more convenient to measure

(Continued on page 99)



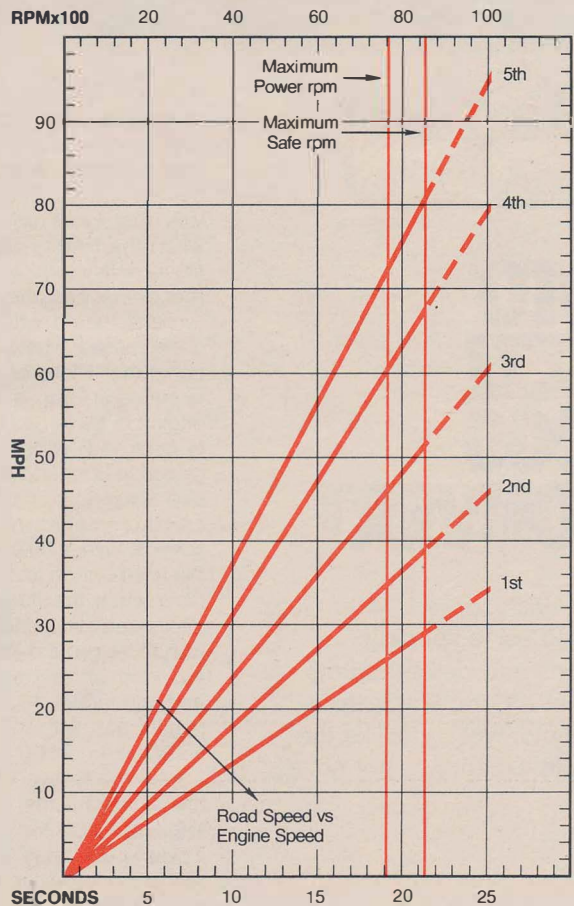
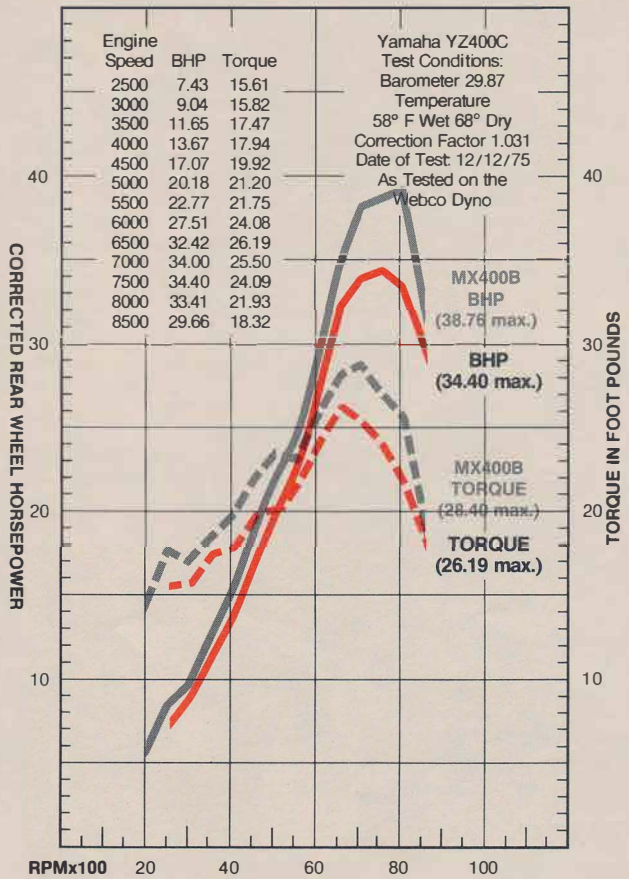
YAMAHA YZ400C

Price, suggested retail \$1400-1500 POE West Coast
 Tire, front 3.00 x 21 Dunlop ET24
 rear 5.00 x 18 Dunlop ETA6
 Brake, front 5.12 x .866 in. (130 x 22mm)
 rear 6.30 x .985 in. (160 x 25mm)
 Brake swept area 33.25 sq. in. (214.46 sq. cm)
 Specific brake loading 12.41 lb./sq. in.
 (0.87 kg./sq. cm)

Engine type Piston-port reed-valve two-stroke single
 Bore and stroke 85 x 70mm (3.34 x 2.76 in.)
 Piston displacement 397cc (24.2 cu. in.)
 Compression ratio ... 7.57:1 corrected to exhaust opening
 Carburetion 1; 38mm; Mikuni VM38SS
 Air filtration Oiled urethane foam, dual elements
 Ignition Magneto CDI, external H.T. coil
 Bhp @ rpm 34.40 @ 7500
 Torque @ rpm 26.19 lb.-ft. @ 6500
 Rake/Trail 31°30'/5.47 in. (31°30'/13.9 cm)
 Mph/1000 rpm, top gear 9.43 with std. sprockets
 Fuel capacity 2.1 gal. (8 liter)
 Oil capacity Mixed with fuel
 (20:1 Castor, 40:1 Synthetic)

Transmission oil capacity 1 qt. (1000cc)
 Primary transmission Spur gear 73/27
 Secondary transmission Roller chain # 520
 (5/8 x 1/4 in.) DID DK520
 Gear ratios, overall (1)22.07 (2)16.46 (3)12.55
 (4)9.65 (5)8.11
 Wheelbase 56.1 in. (142.5 cm)
 Seat height 34.84 in. (88.5 cm) with rider
 Ground clearance 10 in. (25.4 cm) sitting unladen
 Curb weight 252.7 lb. (114.62 kg)
 Test weight 412.7 lb. (187.2 kg)
 Sound level (AMA Standard) 106dB(A)
 @3000 rpm, 20 in., 45°

A look at the compared curves on the dynamometer chart will show the YZ400C and MX400B to have the same basic power characteristics, but the new engine begins to drop off much sooner. We think this is due to a breathing deficiency caused by the bridged seventh port. Installing a Webco head, which has higher compression and better cooling, partially restores the potential, but some porting work will be required by those riders needing more power at high revs. Many experts believe there is an optimum horsepower level, beyond which lies less accurate bike directional control and vastly decreased engine reliability.





The Buco Blueline GT.
For those who put a
high price on their heads.

BUCO[®]
Head protection systems.
by American Safety



**'SuperSound'
MUFFLERS**

\$34.95
P.P.D.

750-F HONDA 550-F

EXPRESS MUFFLERS OFFER
UNRESTRICTED, FULL FLOW PER-
FORMANCE AND EXCITING SOUND
WITHOUT EXCESSIVE NOISE.
AVAILABLE IN SATIN BLACK WITH
CHROME TIP OR ALL CHROME.
FULLY GUARANTEED ONE YEAR.

BLACK W/CHROME TIP \$34.95
ALL CHROME \$39.95

OTHER MODELS AVAILABLE
WRITE FOR INFORMATION.
WE ACCEPT AND

SEE YOUR DEALER, WRITE OR CALL:

EX EXPRESS PRODUCTS
P.O. BOX 957 DEPT. C
MATTHEWS, N.C. 28105
704-847-6038
DEALER INQUIRIES INVITED

YAMAHA 400 . . . Continued from page 35

from the top of the tube to the top of the damper stem down inside the tube. With the fork fully extended, it was 19 inches (48.26 cm) from the tube lip to the damper top. When a tape measure is stuck down to touch the damper, the fork extension and the fluid level can be checked at the same time. A correlative reading can be taken by subtracting Yamaha's level spec from the 19 inches. Our most comfortable setting was 10 inches of oil showing on the tape, 30 psi in the fork chamber, and 55 psi in the small top chamber. Torco #20 fork oil was used for all our tests.

Heavy rubber gaiters are used on the sliders to keep the seals clean. Screened vent holes ring the bottoms of the gaiters to keep them from inflating as the fork works. All of the fork components are made for Yamaha by Kayaba.

Much tougher alloy wheel rims are used on the YZ. The Daido Company makes at least two different rims that look almost the same. The MX400B we had last Spring had the cheaper rims, and we had to tighten spokes every time we rode. The better rims are stamped with number 583 for identification. This year the spokes stayed tight after an initial pounding. A good rim lock on the front and two on the rear keep the tires in place. Visually, the wheel hubs are unchanged from the excellent conical ones from last year. But the brakes are less touchy dry and work much better when wet.

Changes to the Monoshock unit give the rear wheel even greater travel and improve suspension damping characteristics. A longer control rod in the shock body lowers the swinging arm static position and gives the rear axle 7 inches (180mm) of travel. A larger diaphragm chamber has increased the damping oil capacity to 320cc, an increase of 30cc over the older units. (The parts for the new unit will fit the older ones, but it may be cheaper to buy the whole unit. The 1976 prices weren't available at the time of our test.) The swinging arm assembly has the same geometry as the MX400B, but the rectangular-section tubing has been replaced by round tubing.

Five different rate springs are available for the monoshock units. Their rates progress from 3.4 kg/mm to 4.2 kg/mm in 0.2 kg/mm stages. These springs fit all the monoshock units in all the engine sizes for the 1976 models. The springs are longer so that they work with the new longer control rods. The lighter springs are standard on the 100cc and 125cc racers, and the heaviest spring is an optional spring for the YZ400C. But the springs can be interchanged to suit lighter or heavier riders on any 1976 model. The spring on our test bike was color-coded red which indicates a 3.8 kg/mm rate. Last year the code for this rate was white on the shorter spring. The other 1976 codes were not available at the time of the test.

A spring-loaded chain tensioner has been fitted to the swinging arm to prevent any problems from the huge amount of rear wheel travel. A guide finger sticks up from the tensioner's sliding block to keep the chain in place. The normal stamped guide

(Continued on page 102)

It's smart to know how



Know how to tune it . . . to fix it . . . to rebuild it yourself. The **TOTAL SERVICE MANUAL** for your bike will show you how to do everything from a minor adjustment to a major overhaul.

TOTAL SERVICE MANUALS are digests of official factory workshop manuals. Each one is carefully rewritten for use by the do-it-yourself bike owner. Clear and easy to follow, yet complete and detailed enough even for professional use. You get all the important information plus hundreds of the best pictures, diagrams, and specification tables.

TOTAL SERVICE MANUALS

| | | |
|------|---|--------|
| 9840 | AIS & MATCHLESS singles 57-66 all 250, 350, 500 mdls. | \$4.95 |
| 9841 | AIS & MATCHLESS twins 55-65 all 500, 600, 650 mdls. | \$4.95 |
| 0534 | BMW twins 55-74 all 500, 650, 750, 900 models | \$6.50 |
| 3727 | BRIDGESTONE singles, twins all 50, 60, 90, 175 models | \$3.50 |
| 0757 | BSA singles 58-72 covers 250, 350, 440, 500 models | \$6.95 |
| 0756 | BSA twins 47-62 covers A7, A10 all 500, 650 models | \$6.95 |
| 0768 | BSA twins 62-73 covers A50, A65 all 500, 650 models | \$6.95 |
| 9650 | BULTACO covers all 125, 175, 200, 250 models | \$7.50 |
| 0759 | CZ 69-75 covers 125, 175 models | \$6.95 |
| 0535 | CZ 69-74 covers 250, 400 single exhaust models | \$6.50 |
| 0610 | DKW, PENTON 68-74 with 100, 125 Sachs engines | \$7.50 |
| 3728 | DUCATI singles thru 74 all 160, 250, 350, 450 models | \$7.50 |
| 9614 | HARLEY-DAVIDSON singles 47-72 2-stroke, Sprint | \$6.95 |
| 0612 | HARLEY-DAVIDSON twins 59-75 all Glide models | \$6.50 |
| 0607 | HARLEY-DAVIDSON twins 59-75 Sportster models | \$6.50 |
| 9649 | HODAKA 64-75 covers all models 90 to 125cc | \$6.50 |
| 0608 | HONDA CR, MT 73-74 covers 125, 250, Elsinore models | \$6.50 |
| 3788 | HONDA singles 63-74 all 50, 65, 70, 90 models | \$6.50 |
| 9785 | HONDA singles 70-74 all 100, 125, 150, 175, 250, 350, 500 | \$6.50 |
| 0888 | HONDA XL singles 72-75 all 70, 100, 125, 175, 250, 350 | \$6.95 |
| 3751 | HONDA twins 64-74 all 125, 160, 175, 200, 250, 350 | \$6.95 |
| 3752 | HONDA twins 62-68 250, 305, C, CB, CL, CS models | \$6.50 |
| 0986 | HONDA twins 68-75 350, 360, CB, CL, SL, K models | \$6.95 |
| 3749 | HONDA twins 65-74 450 models | \$6.50 |
| 9602 | HONDA fours 72-74 350, 500, 550 models | \$6.50 |
| 3755 | HONDA fours 69-74 covers 750 models | \$6.50 |
| 9779 | HUSQVARNA 66-72 125, 250, 360, 400, 450 models | \$7.50 |
| 3754 | KAWASAKI singles 66-74 all 90 to 350 models | \$6.50 |
| 9616 | KAWASAKI twins 66-72 all 90 to 750 models | \$6.95 |
| 9601 | KAWASAKI triples 69-74 all 250 to 750 models | \$6.50 |
| 0726 | KAWASAKI fours 73-74 covers 900 Z1 | \$7.95 |
| 9533 | LAMBRETTA motor scooter 52-70 all models | \$4.95 |
| 0613 | MAICO 68-75 250, 360, 400, 450, 501 models | \$7.50 |
| 0505 | MOTO GUZZI 66-73 all V700, V750, V850 models | \$7.95 |
| 0614 | NORTON twins 61-75 for 750, 850cc models | \$6.50 |
| 9794 | OSSA 71-72 covers 125, 175, 250 models | \$7.50 |
| 3790 | SUZUKI singles 64-74 all 50 to 400 models | \$6.50 |
| 3792 | SUZUKI twins 64-74 all 125 to 500 models | \$6.50 |
| 0901 | SUZUKI triples 72-74 GT380, GT550, GT750 | \$7.95 |
| 0948 | TRIUMPH twins 58-62 covers 350, 500 models | \$6.95 |
| 3753 | TRIUMPH twins 63-74 covers 500, 650, 750 models | \$6.50 |
| 0893 | TRIUMPH triples 69-74 covers 750 Trident | \$6.95 |
| 9536 | VELOCETTE singles, twins 36-65 | \$4.95 |
| 3748 | YAMAHA Enduro, Motocross 68-74 90-500cc | \$6.50 |
| 3747 | YAMAHA singles 63-67 2-stroke 50 to 100 models | \$6.50 |
| 0897 | YAMAHA 2-stroke 67-75 all 50 to 350 models | \$6.95 |
| 0905 | YAMAHA 4-stroke 70-74 all 500, 650, 750 models | \$7.95 |

MISCELLANEOUS BOOKS & MANUALS

| | | |
|------|--|--------|
| 3741 | MOTORCYCLE ELECTRICAL SYSTEMS | \$4.95 |
| 3742 | MOTORCYCLE CARBURETORS theory & service | \$6.95 |
| 1039 | MOTORCYCLE TROUBLESHOOTING GUIDE take one along | \$5.95 |
| 0745 | MOTORCYCLE REPAIR ENCYCLOPEDIA for all bikes | \$8.95 |
| 0554 | MOTORCYCLE FLAT RATE MANUAL for all bikes | \$4.95 |
| 9668 | TUNING FOR PERFORMANCE how to get more & better | \$5.95 |
| 0543 | TWO STROKE TUNER'S HANDBOOK good for all bikes | \$5.00 |
| 0649 | BOONIE BOOK fine points of off road riding | \$5.95 |
| 0629 | HOW TO WIN MOTOCROSS methods of top professional | \$5.95 |

Add \$1 postage & handling.

CARBOOKS DIV. 181 Glen Ave. Y 52
E.S. Schechter & Co. Sea Cliff, N.Y. 11579

Phone orders (516) 676-8043

ORDER BY BOOK NUMBER ONLY

I enclose full payment \$ _____

Charge my BankAmericard

Acc. # _____

Name _____

Address _____

City _____

State _____ Zip _____

Send FREE catalog

SATISFACTION GUARANTEED OR YOUR MONEY BACK

is retained at the rear sprocket to prevent brush from derailing the chain on cross-country runs.

The swinging arm now pivots on caged needle bearings, and wonder of all wonders, there is a real Zerk grease fitting on the pivot shaft housing so the needles can be lubed regularly. We have been consuming Japanese motorcycles like crazy for twenty years now and until this Yamaha, the only grease fittings that would fit American grease guns properly came on Hodakas. Hooray for Yamaha.

For our riding time on the YZ, we spent two full days and a short photo session at motocross courses, two days in the lower desert not far from the Salton Sea, and a day on mountainous fire roads northwest of Los Angeles.

On the first day at the Indian Dunes short Shadow Glen track, we spent as much time fiddling with the fork pressures and oil amounts as we did riding. About mid-afternoon, we arrived at the settings described earlier and began to loosen up a little. At 252.7 pounds ready to race, the YZ is about 20 pounds fat for an open-class motocrosser. Many of those extra pounds are associated with the Monoshock hardware, and placed up high. The extra weight can be felt easily on sudden switchback turns and when the bike socks a high-banked berm fairly hard. After ten hard laps, the feeling stays with the rider for a while in the form of fatigue.

The strong point of the machine's suspension is its ability to soak up mind-jarring successive shudder-bumps and to remain poised when faced with the deeper and harsher whoop-de-doo. It's almost a time to rest on the YZ when you come to the roughest straight part of a course. As long as the throttle is left on hard, nothing seems to make the machine want to wag its tail or get nose-heavy at an awkward moment.

A professional motocrosser we ride with frequently took the YZ out for a while. When he came back he pointed out that the gear ratios were still too far apart for a pro to ride competitively on a high speed GP circuit. He reinforced our opinion of the excellent suspension and said that the fork is now up to par with the Monoshock. His biggest complaint was with slow, balky gearshift action. There are many places on a track where it's simply too rough to pull the clutch and too time-consuming to roll the throttle off a bit. The bike must shift smoothly under full power without the rider having to touch the clutch.

During a maintenance session that evening, it was noticed that the short shift lever hits a size ten boot right above the arch. The forged aluminum lever is only 4.25 inches long from the center of the pivot to the center of the pedal. A lever from our XL350 Honda was 2 inches longer and fit the splines perfectly. The pedal then hit just above the big toe hinge point on the boot.

It was then, while servicing the air filter elements, that we noticed a lot of sand had gotten through one of the elements and caused the panic mentioned in the first part of the test. After the side covers are off,

the air box lids are removed from each side with a thumb screw. The actual elements are identical foam covers, but the plastic skeletons that go inside the elements are tapered and keyed differently. The rightside skeleton is black, and the left is white. It's a good idea to wash and oil them separately. We found the cleaners to seal perfectly when they were properly oiled and the edge pads thickly coated with grease. Another tip from our friend the pro was that K&N's replacement elements filter just as well and create less restriction to the passage of air. The air box can be snaked out for cleaning each time the filters are washed, but it's much easier to remove the carburetor and stuff a rag in the inlet stub while the box is doused out with a brush and gasoline.

We checked the accuracy of the alignment mark in the magneto flywheel with a strobe light once, but the magnetically triggered ignition never gave a hint of varying, so it was not subsequently included in our regular shop checks.

A single pump of a grease gun on the swinging arm flushed a fresh ring of grease from the pivot needles each time. The pivot bolt on the Monoshock unit should be removed after each ride so its bushings can be greased by hand. Maybe it'll get a fitting next year. There's a felt wiping washer on the monoshock shaft that lives a lot longer if it is given oil each time the tank is off.

There is an astounding number of strictly functional little features that only become evident while routine work is being done. The engine mount bolts are all fitted with lock nuts. Spiral wire insulators surround the control cables wherever they come near the exhaust system. And wire loop guides keep the cables from hanging up on anything when the fork is fully compressed. There is a little roller on the shifter shaft to keep the chain from damaging it if the rider lets the chain get too loose. And another chain guard pad keeps the air cleaner box from getting eaten during a long, tough race. Plastic guards on the handlebar levers keep mud and spray out of the cable pivots. Each cable has a mid-way adjuster so the correct adjustment can be made in a hurry without burning hell out of your hands on a hot engine. The tough plastic fenders and seat frame gave no trouble and showed no signs of cracking during the test. The whole bike shows that the design engineers spent a lot of time listening to suggestions from really first-rate mechanics.

Another day at the motocross track showed that the longer lever only partially solved the shifting problem. A couple of other small bothers showed up that hadn't been noticed before, however. There were a few deep mud holes on the track and the footrests soon packed solid, and our feet kept slipping off at the most awkward times. Opening up the small holes in the flat plate between the toothed ridges would let more of the mud squeeze through. And on a series of really shuddering little bumps about three inches high, the engine would surge as if the throttle were being tweaked. At first we thought the bumps were just making our hand shake enough to jazz the grip over the bumps. But it wasn't that. We finally figured out that the heavy carburetor

slide was bouncing against its spring. It never amounted to a big hassle, but we did get into that corner a little too hot a couple of times.

Another thing noticed the second time out was the effect of different body positions on lap times and fatigue. Our rider for this test stands a lot more frequently than do many other riders. It finally dawned on him that the YZ400C is not a stand-up motorcycle. He got faster and was less tired after he learned to sit down on the seat and let the suspension do the work.

The engine is not one of those frantic, erratic, no-flywheel things that blasts the wheel out of control each time the throttle is touched. In fact, it is quite the contrary. Most big-bore motocrossers are hard work. But the Yamaha is actually fun to ride, because it's so predictable. It doesn't rattle and detonate and sound as if it were going to explode like many other racers do. But it only takes a moment's exhilaration when there should have been attention to the throttle to remind you that this is indeed a sudden and serious motorcycle.

All that furious motocross rushing about was necessary, we suppose, but it took a good long day in the open desert to tell us what this fine motorcycle is all about. Just to be completely legal, a Skyway spark arrestor/muffler was installed in place of the Yamaha racing muffler.

The guys weren't too impressed when the YZ was unloaded. Just another yellow Yamaha. With the little richening knob pulled up, the bike fired on the second kick. A bunch of us eased quickly away from camp so as to disturb as few hangovers as possible. After the fourth big pucker-bush ridge, our rider was out front and he never looked back. The machine squats and leaps as lithely as a cat. It will run 80 mph in high and there were times when the throttle had to be closed to keep from over-revving. The big 5.00 x 18 Dunlop Sports knobby worked only so-so in the mud, but really came into its own in rocky sand.

Back at camp for breakfast, there was much talk about the YZ. Those who rode it later said it was the first two-stroke they really liked. A lot of them raced two-strokes because they knew they were competitive, but they never really *liked* them. It was a combination of the absolutely sure handling and the unexplosive civility of the engine that appealed to them.

There is one long, steep sand hill about 20 miles from camp where many of the dune buggy pilots and bikers meet to race. The YZ was the undisputed king that day. The hill is roughly a quarter mile long, and the steepest climb is about 40 degrees near the top. The YZ would clear sections that stalled even the alcohol-burning buggies. Its engine got stinking hot that day, but it never once detonated or was hard to start.

What this YZ400C is, is one of the best all-around combination machines imaginable. It can be motocrossed reasonably well and it will probably displace the MX400B as the king of the desert races. We had zero trouble with the YZ those two days in the desert other than running out of gas.

With a grin on our face. What the YZ400C needs is a bigger gas tank. ©