

A Monthly Journal for Yamaha World-Wide Dealers



YAMAHA NEWS

1971

Special
Trail
Issue

YAMAHA'S NEW TRAIL SERIES

Newly
Developed
**TORQUE
INDUCTION**

It was Yamaha that induced the dawn of trail age just 4 years ago, and established the trail boom for the ensuing years.

Trail age leader Yamaha has taken another giant stride in this field. Long-awaited new trail models have been unveiled now. The series consisting of 5 models ranging from the 360cc RT2 to the 100cc LT2 have emerged afresh, all featuring striking technological innovations by Yamaha to ensure more dependable and exciting performance than ever.

The focus of the innovations is the newly-developed "torque induction" with a dual-action intake port incorporating the V-shape reed valves between the carburetor and cylinder.



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**7-port power
function**

Yamaha's latest technological innovation has further improved the performance of the powerplant. It has a revolutionary function that the said intake port acts as an additional scavenging port, too. To take it concretely, the dual-action intake port has added to the former 5-port scavenging

system, thus increasing the number of functioning ports to 7, virtually.

The merits of this new system are self-evident. The engine responds more quickly and more smoothly, inducing more torque over wider speed range from low to high.

Powerful King of the Trail

360 Trail RT2

The Yamaha 360 Trail RT2 is the largest displacement single cylinder model of Yamaha. It has already established a fame as the massive trail king of the Yamaha trail series around the world.

Featuring a new torque induction power system its performance has become more than thrilling, delivering the max. power of 32hp/6,000rpm and max. torque of 3.83kg-m/5,500rpm worthy of the roughest terrains.

Higher performance and greater economy

The torque induction 7-port power system is bringing on greater fuel economy as well as increasing the performance of engine equipped with Autolube to meter a correct quantity of oil to best fit the riding conditions.

The RT2 features a newly-developed rotary oil damper to utilize the viscous resistance of oil to dampen shocks and vibration from every riding surface. This device improves road stability and maneuverability with its fluid-smooth operation.

A new quilting-type dual seat has noticeably improved riding comfort on punishing surfaces.

Double spring-type rear shock absorber smooths out both minor and major shocks efficiently. The overall tension can be adjusted in 5 steps in accordance with the variation of riding conditions.

A smooth constant-mesh 5-speed transmission has no problem keeping a powerful engine within its ideal power band with effortless shifting.

Along with higher performance, this model is proud of top class safety represented by waterproof and dustfree brakes on both wheels to sharply respond to any requirement of emergency stop.

Included in standard equipments are a large-size tachometer, luminous speedometer, large-capacity battery and one-touch open fuel tank.

SPECIFICATIONS

PERFORMANCE

Max. speed range..... 133 ~ 135 km/h
(83 ~ 85 mph)
Climbing ability..... 35 degrees
Min. turning radius..... 2,000 mm (78.7 in.)
Min. braking distance 15 m @50 km/h
(49 ft. @31 mph)

ENGINE

Type 2-stroke, Torque Induction, Single
Displacement..... 351 cc (21.42 cu. in.)
Bore & Stroke 80 x 70 mm
(3.150 x 2.756 in.)
Compression ratio 6.3:1
Max. horsepower..... 32 hp @6,000 rpm
Max. torque..... 3.83 kg-m (27.7 ft-lb)
@5,500 rpm
Lubrication system Autolube
Starting system..... Primary kick starter
Transmission 5-speed gearbox

DIMENSIONS

Overall length..... 2,100 mm (82.7 in.)
Overall width..... 890 mm (35.0 in.)
Overall height..... 1,160 mm (45.7 in.)
Wheelbase..... 1,390 mm (54.7 in.)
Min. ground clearance..... 255 mm (10.0 in.)

WEIGHT (Net) 119 kg (262 lbs.)

FUEL TANK CAPACITY 9.5 lit
(2.5 US gal.)

OIL TANK CAPACITY..... 1.6 lit.
(1.7 US qt.)

TIRES front..... 3.25-19-4PR
rear..... 4.00-18-4PR

COLORING Silver



The Trail Pioneer

250 Trail DT2

The Yamaha 250 Trail DT2 pioneering the trail boom has been also fully modified in performance as well as in appearance.

This model is representing most conspicuously Yamaha's technological merits which have been all bred from a great store of motocross experience. Double-cradle frames of high tension steel are ideally light but exceptionally rugged just to meet needs on motocross circuits as well as on any other terrains. It features the world-renowned Ceriani type front forks for the sake of improved mobility and extra ruggedness. Needless to say, its new torque induction 7-port power engine proves a source of high performance in negotiating the most punishing terrains.

Fully equipped for Action

Like its bigger brother, the DT2 is mounted with a newly-designed rotary oil damper. This new mechanism makes use of oil viscosity to dampen shocks and vibration from riding surfaces which tend to torque the front wheel steering column.

The rear suspension system can be adjusted in five steps to assure maximum riding comfort and maneuverability on whatever riding conditions. A new muffler protector and chain guard will do much for smoother and safer terrain going.

The tachometer and speedometer are clustered on the front for effortless viewing. The large and bright headlamp assures top class safety at night. Both brakes are ideally waterproof and dustfree, and show a quick and fade-free response at any time.

The DT2 is fitted with tough knobby tires which provide excellent roadgripping for extra stability and handling ease.

The constant-mesh fully synchronized 5-speed transmission is just for serious trail riding. Shifting is very positive.



SPECIFICATIONS

PERFORMANCE

Max. speed range..... 120 ~ 125 km/h
(75 ~ 78 mph)
Climbing ability..... 35 degrees
Min. turning radius..... 2,000 mm (78.7 in.)
Min. braking distance 15 m @50 km/h
(49 ft. @31 mph)

ENGINE

Type 2-stroke, Torque Induction, Single
Displacement..... 246 cc (15.01 cu. in.)
Bore & Stroke 70 x 64 mm
(2.756 x 2.520 in.)
Compression ratio 6.8:1
Max. horsepower..... 24 hp @7,000 rpm
Max. torque..... 2.53 kg-m (18.3 ft-lb)
@6,000 rpm
Lubrication system Autolube
Starting system Primary kick starter
Transmission 5 speed gearbox

DIMENSIONS

Overall length..... 2,100 mm (82.7 in.)
Overall width..... 890 mm (35.0 in.)
Overall height..... 1,160 mm (45.7 in.)
Wheelbase..... 1,390 mm (54.7 in.)
Min. ground clearance..... 255 mm (10.0 in.)

WEIGHT (Net) 117 kg (258 lbs.)

FUEL TANK CAPACITY 9.5 lit.
(2.5 US gal.)

OIL TANK CAPACITY..... 1.6 lit.
(1.7 US qt.)

TIRES front..... 3.25 19-4PR
rear..... 4.00-18-4PR

COLORING Hot Red
Pearl Yellow Gold



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A Rugged Lightweight Performer

175 Trail CT2

The Yamaha CT2 is the nimble lightweight runner of the trail family. It also features all the technological innovations of Yamaha, represented by a new torque induction 7-port power engine.

"Versatile" "Maneuverable" and "Quiet" will describe this model most definitely.

Yamaha's engineering efforts can be seen in features such as the tough and dependable front forks which negotiate the most punishing riding conditions, while maintaining excellent stability, knobby tires for outstanding roadholding and wide quilted dual seat for maximum riding comfort, to say nothing of the world-renowned Autolube oil injection system.

Improved Handling

The wheelbase is ideally short at 50.8 in. with enough ground clearance of 9.4 in. These two features combine together to make this model a better-handling performer over rough terrains.

Sharp turns around trees, climbing over hills, and attacking rocky fords are all comfortably easy on this machine.

Handling is proven quick at all speeds especially over a range from medium to high.

The engine powering this model is an all-aluminum 7-port design to displace 171cc and deliver an exciting 16 hp. The new torque induction 7-port power engine is fitted with the Autolube oil injection system to correctly meter an amount of oil to best suit every riding condition, of course.

Riding at night is safe with the extra large headlamp. The turn indicators are mounted where they can be seen effortlessly at any



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time and under any circumstances.

Dustfree and waterproof brakes on both wheels are powerful and ready to operate in response to any requirement of emergency stop.

SPECIFICATIONS

PERFORMANCE

Max. speed range 107 ~ 115 km/h
(67 ~ 71.5 mph)
Climbing ability 32 degrees
Min. turning radius 1,900 mm (74.8 in.)
Min. braking distance 15 m @50 km/h
(49 ft. @31 mph)

ENGINE

Type 2-stroke, Torque Induction,
Single
Displacement 171 cc (10.43 cu. in.)
Bore & Stroke 66 x 50 mm
(2.598 x 1.969 in.)
Compression ratio 6.8:1
Max. horsepower 16 hp @7,500 rpm
Max. torque 1.65 kg-m (11.9 ft-lb)
@6,000 rpm
Lubrication system Autolube
Starting system Primary kick starter
Transmission 5-speed gearbox

DIMENSIONS

Overall length 1,980 mm (78.0 in.)
Overall width 910 mm (35.8 in.)
Overall height 1,110 mm (43.7 in.)
Wheelbase 1,290 mm (50.8 in.)
Min. ground clearance 240 mm (9.4 in.)
WEIGHT (Net) 97 kg (214 lbs.)
FUEL TANK CAPACITY 7.0 lit.
(1.8 US gal.)

OIL TANK CAPACITY 1.2 lit.
(1.3 US qt.)

TIRES front 3.25-18-4PR
rear 3.50-18-4PR

COLORING Brilliant Red

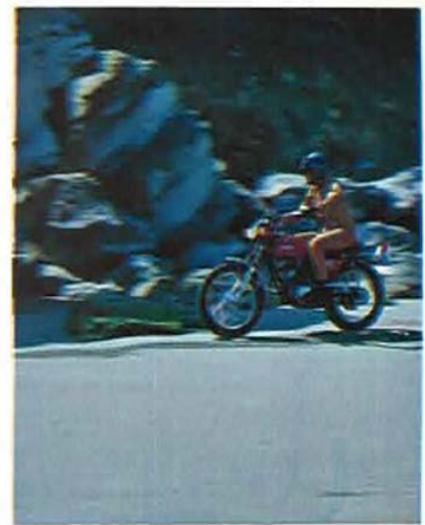
Compact and Powerful Competitor

125 Trail AT2

The Yamaha 125 Trail AT2 has emerged afresh to thrill trail enthusiasts in its own class around the world. The most noteworthy feature added to this model is a Yamaha's torque induction 7-port power engine to ensure hotter going over every type of terrain.

It is the smaller brother straight developed from the world-renowned 250 DT model. Its performance has been consistently proven exciting and steadfast on the most gruelling motocross circuits.

A great store of engineering has backed this unique compact model to give riders the fullest enjoyment and thrill of trail riding.



Compact body, big performance

The new 7-port engine has appreciably improved this trail model in performance by bringing on nearly 100% scavenging efficiency over wide range of speeds.

A 5-step adjusting rear suspension allows a rider to select the exact rear wheel shock absorption for the road surface he is traveling.

Newly designed fuel and oil tanks, rear lamp mounting bracket designed to take more punishment, a chain guard and muffler protector—those are all for safe and

comfortable traveling on open highways as well as for thrilling and exciting terrain trail.

The AT2 also incorporates a new rotary oil damper to dampen shocks and vibration for the sake of better road stability.

The large-size front brake operates sharply for dependable control action at any time. Both knobby tires assure positive and ideal roadgripping on the roughest riding conditions.

The 5-gear constant-mesh transmission is

completely synchronized to ensure smooth and positive operation on whatever operating conditions. Minimum road clearance of 8.9 in. proves just suitable for varied terrain requirements.

SPECIFICATIONS

PERFORMANCE

Max. speed range 105 ~ 110 km/h
(65 ~ 68 mph)
Climbing ability 30 degrees
Min. turning radius 1,900 mm (74.8 in.)
Min. braking distance 15 m @50 km/h
(49 ft. @31 mph)

ENGINE

Type 2-stroke, Torque Induction,
Single
Displacement 123 cc (7.51 cu. in.)
Bore & Stroke 56 x 50 mm
(2.205 x 1.969 in.)
Compression ratio 7.1:1
Max. horsepower 13 hp @7,000 rpm
Max. torque 1.38 kg-m (10.0 ft-lb)
@6,000 rpm

Lubrication system Autolube
Starting system AT2J: Primary kick starter
AT2E: Electric & Primary kick starter
Transmission 5-speed gearbox

DIMENSIONS

Overall length 1,960 mm (77.2 in.)
Overall width 910 mm (35.8 in.)
Overall height 1,090 mm (42.9 in.)
Wheelbase 1,285 mm (50.6 in.)
Min. ground clearance 225 mm (8.9 in.)
WEIGHT (Net) AT2J: 94kg (207 lbs.)
AT2E: 100kg (221 lbs.)

FUEL TANK CAPACITY 7.0 lit.
(1.8 US gal.)

OIL TANK CAPACITY 1.2 lit.
(1.3 US qt.)

TIRES front 3.00-18-4PR
rear 3.25-18-4PR

COLORING Mandarin Orange
Marine Blue



Versatile on any Terrain

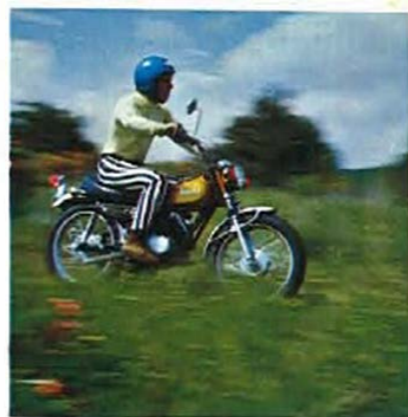
100 Trail LT2

The Yamaha 100 Trail LT2 is claimed to be a spirited leader in its own class. It has been designed and intended for versatility in that it is ideal for the novice and a real ultra-lightweight performer for skillful riders alike. Like its bigger brothers of the trail series, the LT2 features striking technological innovations which Yamaha has recently introduced. The most conspicuous feature is a torque induction 7-port power engine. The V-shaped reed valves flawlessly respond to changes in engine pressure to either supply fuel or completely seal the engine during the compression stroke.

Exceptionally rugged

The famous Ceriani type front forks are built to negotiate shocks from the roughest surfaces while maintaining stability and maneuverability. The frame is compact but can take a lot of punishments on terrains. Controls are clustered together near the clutch lever on the left handle-grip where operation of the lights and horn is easy and convenient, especially for the novice. The 5-gear transmission operates quietly and smoothly, and the change lever and footrest are positioned for maximum com-

fort and shifting ease even while going over the most grueling surface. The stoplamp and flasher lamp have become noticeably larger than the previous models for improved safety. They can be readily seen both day and night for extra assurance. The rear suspension is equipped with a new 5-step adjusting device which enables a rider to change the tension of rear shocks to any one of five degrees for maximum control and riding comfort in accordance



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with the variation of riding surface conditions. Tension is relaxed for cruising down the open highway and tightened for attacking rough terrains.

SPECIFICATIONS

PERFORMANCE

Max. speed range 93 ~ 100 km/h
(58 ~ 62 mph)
Climbing ability 27 degrees
Min. turning radius 2,100 mm (82.7 in.)
Min. braking distance 15 m @ 50 km/h
(49 ft. @ 31 mph)

ENGINE

Type 2-stroke, Torque Induction,
Single
Displacement 97 cc (5.92 cu. in.)
Bore & Stroke 52 x 45.6 mm
(2.047 x 1.795 in.)
Compression ratio 6.9:1
Max. horsepower 10 hp @ 7,500 rpm
Max. torque 0.97 kg-m (7.0 ft-lb)
@ 7,000 rpm
Lubrication system Autolube
Starting system Primary kick starter
Transmission 5-speed gearbox

DIMENSIONS

Overall length 1,910 mm (75.2 in.)
Overall width 900 mm (35.4 in.)
Overall height 1,050 mm (41.3 in.)
Wheelbase 1,240 mm (48.8 in.)
Min. ground clearance 220 mm (8.6 in.)
WEIGHT (Net) 85 kg (187 lbs.)
FUEL TANK CAPACITY 6.0 lit
(1.6 US gal.)

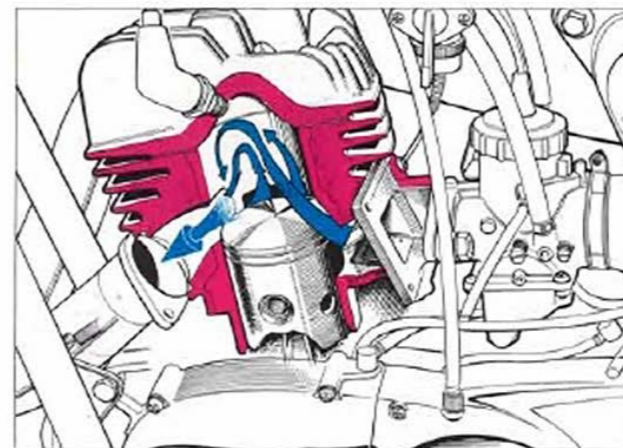
OIL TANK CAPACITY 1.2 lit.
(1.3 US qt.)

TIRES front 2.75 18-4PR
rear 3.00 18-4PR
COLORING Candy Yellow

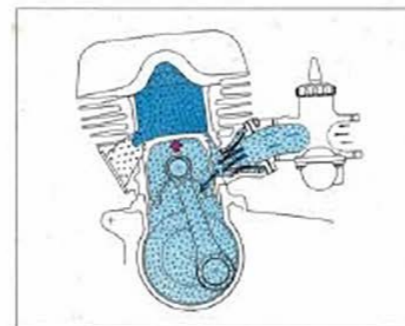
TORQUE INDUCTION

A 7-port torque induction power system is claimed to be Yamaha's another score in the field of 2-stroke motorcycle engineering, where Yamaha has enjoyed its unparalleled fame for unique and revolutionary technological achieve-

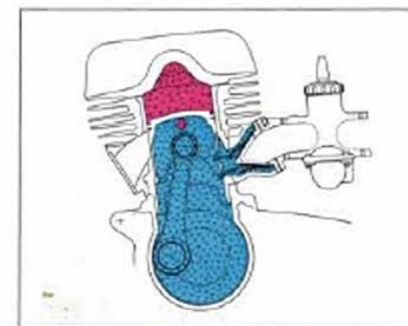
ments such as Autolube, world-beating air-cooled twin and water-cooled 4-cylinder machines as well as fantastically fast piston-valve production racers TD2 and TR2.



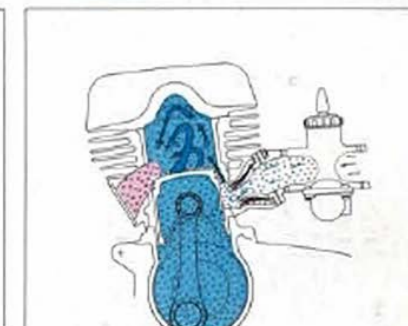
How it works



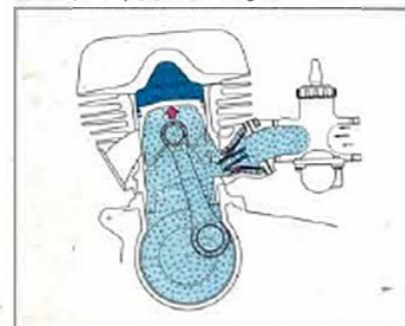
***Piston upward (intake/scavenging)**
With a piston moving upward, negative pressure in a crankcase becomes higher. The moment an inlet window on a piston reaches an intake port, reed valves open to induce mixed gas. In other words, this system starts poring faster than a conventional piston valve engine.



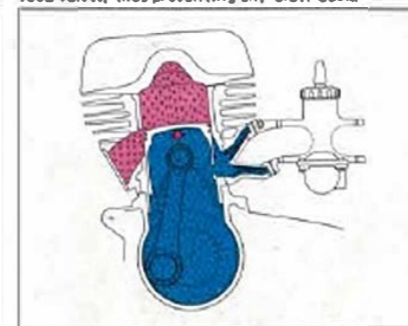
***Piston downward (combustion)**
Mixed gas which has been compressed into a combustion chamber on the upper part of piston ignites and burns. Then, a piston moves downward. Naturally, new intake of mixed gas in a crankcase on the lower part of piston is compressed to close reed valves, thus preventing any blow back.



***Piston downward (7-port function)**
A piston keeps on moving downward. Two main and two sub scavenging ports open, and new intake of fresh fuel which has been compressed in a crankcase flows into a cylinder to drive out burnt gas through an exhaust port. This is so called a 5-port scavenging system. As for Yamaha's new device, one more port, add, to increase scavenging efficiency to a maximum. The upper part of intake ports opens to induce new gas compressed in a reed valve chamber into a cylinder. Then, the inertia of gas flow together with the pulsatory motion of 5-port scavenging open a reed valve for the sake of entirely new-direct scavenging. In a word, an intake port serves as an additional scavenging port. The effects of this dual action produce ideal torque at all speed ranges.



***Piston upward (intake/compression)**
A piston moves further upward, and an intake port fully opens to induce a large volume of mixed gas through reed valves. Exhaust and scavenging ports on the upper part of piston close to be ready for compression stroke.



***Piston downward (exhaust)**
A piston moves further downward, and an exhaust port opens to discharge burnt and swelling gas. On the other hand, mixed gas is further compressed in a crankcase. The gas is partly induced and compressed into a reed valve chamber through a piston's inlet window from a crankcase.

Yamaha 250 Trail Test Reports

The Yamaha 250 Trail DT model has upheld the position of market leader in its own class since it was first marketed early in 1968. Really, it has been the symbol model of the trail age leader Yamaha for its race-proven exciting performance and the youth-appealing intrepid appearance. The latest version of this model was put on sale at home under the designation of the 250 Trail DT2 in July.

It features all of Yamaha's traditional engineering inherited from its predecessors, but innovations both in performance and in outlook are also noteworthy.

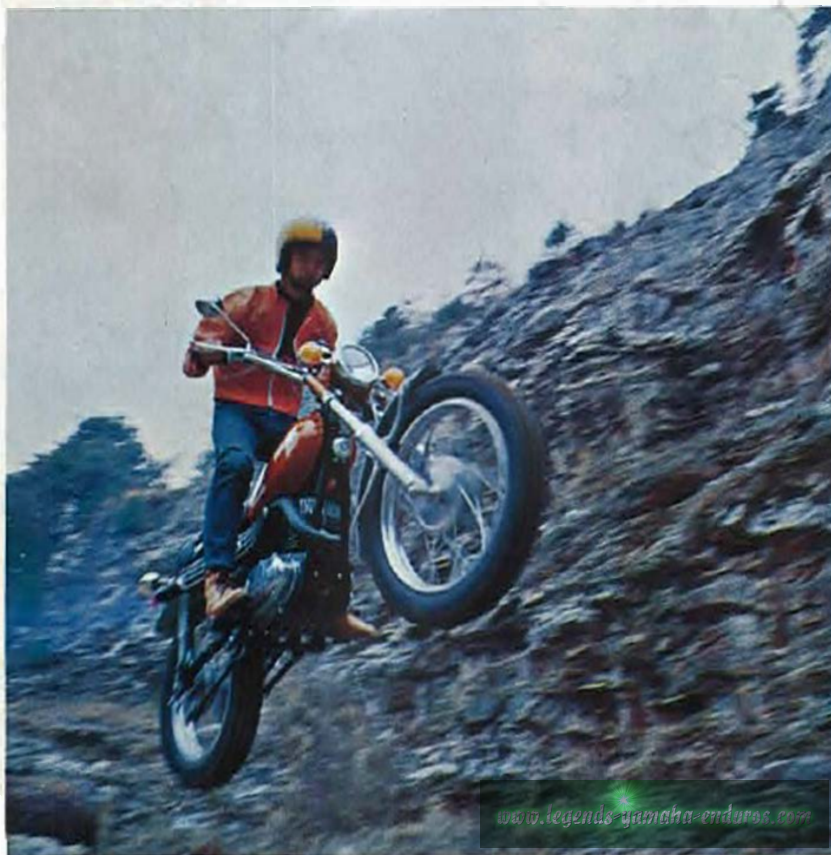
Here introduced is the summary of the test first conducted on this model by an expert test rider of Auto-by, one of the leading motorcycle journals in Japan.

Power plus high performance

The focus of modifications is the newly developed 7-port reed valve engine. This system is intended for increasing the efficiency of scavenging to a maximum by adding a dual-action Intake port to the former 5-port scavenging system. This new system proves Yamaha's another score in tightening its leadership in this field of products. Torque induction has become appreciably smoother over a wide range of speeds.

Generally speaking, higher performance can

be gained only at the cost of riding comfort, and the outlook of high performance model itself becomes somewhat rougher. But, it is not the case with the 250 DT2, though it has become definitely more receworthy in performance thanks to the abovementioned striking improvement. Much to our surprise, the new Yamaha has become a softer-touching model despite its higher performance than the predecessors. Kick starting is felt steadfast rather than snappy.



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Clutch operation is smooth and easy, as if I handled a smaller road model.

Starting at low gear is felt more dynamic than the former model.

Acceleration is powerful but smooth with no adverse effects felt.

While shifting from 1st to 2nd, and further to 3rd, 4th and 5th, the 7-port engine displays unique characteristics. First, I need not mind shift timing so much, as response to each shift requirement is very quick and smooth.

The new Yamaha has proven ideally terrain-worthy. On sands or stony surfaces where the machine loses a considerable portion of driven power, the new Yamaha enables a rider to enjoy a trouble-free riding at low speeds. It is also ready to meet the requirement of wheel spin at any time.

On the other hand, it has completely got rid of under-steer feeling as was sometimes the case with the former models on normal highways.

High speed cornering results in no ill effects.

Included in notable features are powerful waterproof and dustfree brakes, improved suspensions and larger-size battery.

The fuel tank has been made somewhat roundish with no stripe on the side which used to be an outside accent with the former models. This has added a refined feeling to the appearance of this model. A newly-designed quilting dual seat looks more raceworthy, though it has improved riding comfort without touching a rider's inside knees.

The protector of upswept muffler has been finished nicely. Modifications have also been done to the shapes of oil tank and chaincase. In a word, the new Yamaha features more raceworthy individuality as well as more luxurious moods.