

**'94 YAMAHA**

# **1994 TZ/TYZ MODELS**

## **PRESS RELEASE**

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**'94 YAMAHA TZ125**

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**Introduction**

There can be few professionals in Grand Prix road racing today who didn't ride a production Yamaha in their ascent to stardom. That's because since the 1960's we have followed a policy of building high-technology race bikes for privateers, enabling countless riders over the last few decades to experience factory-machine performance from a production model.

More recently Yamaha have clearly underlined their total commitment to road racing's premier class by working closely with ROC in France and Harris in the United Kingdom to build production 500cc machinery. Bristling with up-to-the-minute technology, these European-built racers offer up-and-coming riders the chance to experience Grand Prix racing on competitive bikes.

And now, joining our ROC and Harris 500s and the renewed TZ250 is an all-new machine that expands Yamaha's range of top-level production race bikes even further:

**The TZ125.****The all-new TZ125**

Built using the same advanced engine and chassis technology that is seen on our Grand Prix-winning TZ250, the new TZ125 is an entry-level race bike which is sure to help expand racing at grass-roots level. And with its high specification it also offers experienced privateers the opportunity to race competitively in the 125cc Grand Prix class.

The new crankcase reed-valve induction engine is tuned to deliver responsive power over a wide rpm range, making it well suited to new riders, while at the same time providing plenty of race-winning power for top-level competitors. The chassis is the most technologically-advanced in the 125 class, and features a new lightweight Deltabox frame and factory-bike quality suspension for razor-sharp handling. And because we understand that privateers often operate on a limited budget the TZ125 has been specifically designed to be easy to tune and maintain.

For sure, many of tomorrow's Grand Prix stars and even future World Champions will not find a better machine on which to develop their skills in preparation for the big time. And as the following details of the new TZ125's specification clearly show, this machine is set to completely dominate the 125cc class.

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**'94 YAMAHA TZ125**

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**Engine**

So far this season the Yamaha TZ250 is proving to be the most competitive race-bike in its category at all levels of competition, and the all-new TZ125 engine incorporates many of the same advanced features seen on its bigger brother.

Producing more power than anything else in the class, the liquid-cooled 124cc engine features high-efficiency crankcase reed-valve induction and a ceramic-composite plated 56 mm x 50.7 mm cylinder for improved performance and reduced wear.

Like the Grand Prix-winning TZ250, the new 125 uses a flat-shape Yamaha Power Valve System (YPVS) which increases and decreases exhaust aperture to perfectly suit engine speeds. Controlled by a digital C.D.I. unit, this system improves the spread of power for smooth acceleration and reduced peakiness. The C.D.I. unit is also linked to the Mikuni TM38 powerjet carburettor, meaning that the inlet and exhaust processes run at their most efficient settings over a wide rpm range. Last but not least the C.D.I. unit advances the ignition curve, depending on engine acceleration speed.

Consequently the TZ engine performs better than any other 125 from low speeds all the way up to the peak power output at 12,000 rpm.

Bottom-end of the compact engine features new crankcases with a straight inlet passage for exceptionally high intake efficiency, allowing the TZ125 to pick up instantaneously and rev freely to the red line. To reduce vibration and keep overall crankcase dimensions to a minimum a single balancer shaft is used. Situated behind the crankshaft, the balancer's monoaxial design eliminates vibration-induced chassis fatigue and allows the engine to be rigidly mounted to the Deltabox frame for increased strength and therefore improved handling.

For improved feel and performance the TZ125 uses a dry clutch which feeds power to a close-ratio 6-speed cassette-type gearbox allowing quick and easy change of different gear ratios while the engine remains in the frame. Transmission is of a semi-dry sump design, with oil being force fed by a trochoid pump to the drive and main axles, a system which gives improved lubrication and lower frictional losses than a conventional wet sump.

With its highly-efficient crankcase induction system, flat-shape YPVS, ceramic-composite plated bore and low-friction transmission, the all-new TZ125 engine delivers a wide band of smooth power that makes this machine an excellent introduction to the world of road racing for new riders, as well as the leading bike for experienced riders looking to establish a name for themselves in the tough world of 125cc Grand Prix.



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**Frame**

Just like our Grand Prix-winning 250cc and 500cc factory bikes the new TZ125 uses an aluminium Deltabox chassis, one of the most advanced and successful designs ever produced. Remarkably light and offering immense rigidity.

To allow easy access to the machine's rear suspension the new frame features a fully-detachable subframe, and for high levels of lateral rigidity combined with low unsprung weight the sturdy box-section swinging arm is manufactured from aluminium.

**Suspension**

Every effort has been made by our race engineers to ensure that the TZ125 outperforms anything else on the track, and so as well as building the most advanced engine and chassis in the category we have also equipped the smallest TZ with the most sophisticated suspension available.

Grand Prix-developed upside-down front forks use stiff 36mm inner tubes to give high rigidity and precise steering. With full adjustment for spring preload and compression/rebound damping they allow the rider to set the machine up to perfectly suit individual riding styles and differing track conditions.

At the back end a sophisticated Monocross suspension system features an advanced rising-rate linkage and a piggyback fluid reservoir. Compact and light, this system is fully adjustable for spring preload, as well as compression and rebound damping, and gives excellent roadholding performance.

**Brakes**

Braking system components are identical to those fitted to the TZ250. At the front a floating 282mm single disc is drilled to reduce unsprung weight, and is operated by a powerful 4-piston calliper. Together with the 185mm rear disc with 2-pot calliper this high-specification set-up gives a precise feel and excellent braking performance.

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**'94 YAMAHA TZ125**

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**Technical Highlights**

- ❑ New liquid-cooled, 124cc, single-cylinder, crankcase reed-valve engine with ceramic-composite plated cylinder and YPVS pumps out plenty of winning performance.
- ❑ 38mm TM carburettor equipped with powerjet delivers highly accurate fuel metering for smooth acceleration and excellent high-speed performance.
- ❑ Pressure-fed dry-sump transmission reduces oil drag for low frictional loss and high reliability.
- ❑ Digital CD ignition linked to YPVS and powerjet for excellent acceleration and top speed performance.
- ❑ Dry clutch provides slick shifting and high durability.
- ❑ Cassette-type 6-speed transmission makes it easy to change gear ratios.
- ❑ Deltabox aluminium frame for high rigidity and precise handling.
- ❑ Inverted front forks are fully adjustable for spring preload and compression and rebound damping, and feature stiff 36mm tubes for precise steering performance.
- ❑ Monocross rear suspension with rising-rate linkage delivers excellent roadholding.
- ❑ 282mm front disc brake operated by 4-piston calliper and 185mm rear disc for race-winning braking performance.

**Fairing, seat and instruments**

Compact fairing with extremely low frontal area and aerodynamically-efficient design is the result of our unrivalled experience in Grand Prix racing. Together with the integrated seat cowl and sidecovers it gives the TZ an extremely low drag coefficient which helps account for the machine's excellent high-speed performance.

Like many of the 125's components its instruments are identical to those on the TZ250. Featuring a compact analog tachometer and water temperature gauge, the lightweight display gives the rider easily-understandable information.

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**'94 YAMAHA TZ125**

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**Spare Parts Kit**

For the TZ125 a comprehensive spare parts list is available which includes a wide variety of service items from a cylinder and crankshaft through to brake pads and clutch plates.

The full list is as follows:

**Engine**

Crankshaft assembly  
Cylinder  
YPVS cover  
Piston  
Piston pin  
Piston ring  
Circlip  
Small-end bearing

**Carburettor**

Main jets (various sizes)  
Pilot jets  
Jet needle  
Needle jets  
Power jets

**Clutch**

Friction plate A  
Friction plate B

**Transmission**

2nd pinion  
3rd/4th pinion  
5th pinion  
6th pinion  
1st gear  
2nd gear  
3rd gear  
5th gear  
6th gear  
Sprocket

**Gaskets**

Cylinder t0.5 - t0.8  
Waterpump  
Reed valve  
Side case  
Oil drain

**O-rings**

Pushrod  
Mainshaft

**Cylinder**

Small  
Large

**Brake**

Front brake pad  
Rear brake pad

**Sprockets**

35, 36, 38, 39 T  
Sprocket dampers

**Circlip**

Reed valve  
Hose clamp

**Lock washers**

Clutch  
Sprocket

**Others**

Exhaust pipe  
Oil seals  
Seat pad  
Stickers  
Main stand  
Guard flap

## **'94 YAMAHA TZ125**

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### **New TZ125 dominates All-Japanese 125cc Championship**

As part of the research and development programme for the all-new Yamaha TZ125 a prototype machine sharing the same specifications as the production bike has been raced in the All Japanese Championship with remarkable results.

Ridden by Yoshiaki Kato, the TZ125 won first time out against Japan's top riders in what is considered to be the most competitive class in the domestic championship.

To show that this was not a one-off result Kato since won a further 3 rounds together with a second position to give him and his prototype TZ125 a convincing overall lead in the championship after 7 rounds, 44 points ahead of second placed Honda rider K. Takao.

With 4 wins and one second place from 5 starts the TZ125 has demonstrated its outstanding performance in Japan against top-quality competition, and with this proven track record behind it the production 1994 model TZ125 looks set to be sure a winner next season!

### **Summary**

The TZ125 represents a logical extension of our policy of offering the road racing privateer a chance to benefit from Grand Prix-developed technology. Designed and built to a higher specification than any other motorcycle in the class, the TZ125 completes our race-bike line up, making Yamaha the only manufacturer to offer highly competitive production machinery in all three Grand Prix categories.



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**'94 YAMAHA TZ250**

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**Introduction**

Actions speak louder than words. And throughout the years the Yamaha TZ250 has consistently demonstrated its total superiority on the racetrack at every level of competition.

No other racing machine available to the privateer has won so many races over such a long period of time. Indeed, the TZ250 is not only the most successful production race bike of all time, it is also the machine on which many past and present World Champions have made the grade. And if further evidence was needed to illustrate this model's total domination of the 250cc class, one only needs to look at Team Yamaha rider Tetsuya Harada's remarkable performance in the 1993 World 250cc Road Racing Championship on his factory TZ250M on which the latest TZ250 is closely based.

Featuring a range of engine and chassis improvements, the 1994 TZ250 is once again going to be the dominant force on the track next season.

**Engine**

Changes made to the liquid-cooled 90 degree V-twin engine are a direct result of technological feedback from our successful 1993 250cc World Championship programme, and are designed to give the latest TZ quicker and also smoother acceleration.

Although the basic layout remains the same as the winning '93 design, detail improvements have been made to the cylinders, transmission and ignition system.

To boost mid-range and top-end performance the exhaust and transfer ports have been reshaped, and new expansion chambers are used. Factory race engineers have also increased durability of the TZ's transmission by using thicker clutch plates and a wider primary drive gear and 2nd gear pinion.

Also changed are the mapping sequences for the digital ignition system which now operates in 6 degree steps compared to 4 degree steps for the '93 model. This change, together with the use of a smaller diameter ignition rotor — down from 88mm to 75mm — results in quicker and smoother acceleration.

**Frame**

The Deltabox frame is without a doubt the most successful design ever seen on the racetrack. With its exceptionally high rigidity and low weight it offers precision handling performance that gives the TZ a crucial advantage in this competitive class.

For 1994 the frame retains the same proven geometry, but now features a fully-detachable subframe which makes for quick and easy shock absorber maintenance, and also facilitates general repairs by giving improved accessibility to the TZ's rear end.



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## **'94 YAMAHA TZ250**

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### **Fairing and Seat.**

The new TZ250 features a number of changes that are a direct spin-off from our '93 season Grand Prix-winning TZM factory racer, most noticeable of which is the new fairing. Much rounder than the '93 design, the '94 fairing incorporates modified inner ducting, and together with the new seat gives improved aerodynamic efficiency for better top speed performance.

Also new for '94 is the instrument stay which is now a stronger one-piece construction.

### **Rear wheel**

To allow the fitment of a wider section rear tyre for improved traction the TZ250 now uses a wider rear wheel rim, up from 5.25 X 17 to 5.50 X 17 for 1994.

### **Technical Highlights**

- ❑ Liquid-cooled, 249cc, 90 degree V-twin with crankcase reed-valve induction, ceramic-composite plated cylinders and Yamaha Power Valve System (YPVS).
- ❑ New cylinder porting design and redesigned expansion chambers for increased mid-range and top-end performance.
- ❑ Modified digital mapped ignition system and smaller diameter ignition rotor for quicker, smoother acceleration.
- ❑ Dual Mikuni TM38SS flat-slide carburettors.
- ❑ Lightweight aluminium Deltabox frame with high rigidity for exceptional handling performance now features fully-detachable subframe for easy shock access.
- ❑ Works-type upside-down forks for flex-resistant front suspension with precision steering.
- ❑ TZ250M-based fairing and seat for high aerodynamic efficiency.

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**'94 YAMAHA TZ250**

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**Spare Parts Kit**

For the TZ250 a comprehensive spare parts list is available which enables competitors to keep their machine running at peak performance throughout the race season.

Full contents are as follows:

**Engine**

Crankshaft assembly  
Cylinder  
YPVS Cover  
Cylinder head  
Piston  
Piston pin  
Piston ring  
Circlip  
Small-end bearing

**Carburettor**

Main jets (various sizes)  
Pilot jets  
Jet needle  
Needle jets  
Power jets

**Clutch**

Friction plate A  
Friction plate B  
Clutch plate

**Transmission**

Mainshaft  
2nd pinion  
6th pinion  
1st gear  
2nd gear  
6th gear  
Sprocket

**Gaskets**

Cylinder t0.5 - t0.8  
Waterpump  
Reed Valve  
Side case  
Oil drain

**O-rings**

Pushrod  
Mainshaft

**Cylinder**

Small  
Large

**Brake**

Front brake pad  
Rear brake pad

**Sprockets**

34, 35, 36, 38, 39, 40T  
Sprocket dampers

**Lock washers**

Clutch  
Sprocket

**Others**

Throttle cable  
Hose clamps  
Reed valves  
Oil seals  
Exhaust pipe  
Exhaust pipe spring  
Seat pad  
Stickers  
Main stand  
Owners manual

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## **'94 YAMAHA TZ250**

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### **Summary**

It is no overstatement to say that the Yamaha TZ250 is a legend in the world of road racing. Throughout the 60s, 70s, 80s and now the 1990s this model has offered privateers all over the world the opportunity to benefit from factory performance from a production machine.

Built using Yamaha's unmatched knowledge of high-performance 2-stroke technology, the TZ250 is the most advanced machine in the class. No other bike has ever come close to achieving the same level of success of this machine, and with its improved specification for 1994, it looks as if things are going to stay that way!



**ENGINE**

Type . . . . .	Liquid cooled 2-stroke
Cylinder arrangement . . . . .	Forward inclined single cylinder
Displacement . . . . .	124 cc
Bore & Stroke . . . . .	56.0 x 50.7 mm
Compression Ratio . . . . .	8.5 : 1
Maximum Power . . . . .	42 Hp / 12.000 Rpm.
Maximum Torque . . . . .	2.5 Kgm. / 11.750 Rpm.
Ignition System . . . . .	C.D.I.
Carburettor . . . . .	Mikuni TM38
Spark Plug . . . . .	NGK R6385-105
Lubrication system . . . . .	Premix

**TRANSMISSION**

Primary Reduction Ratio . . . . .	60 / 21 (2.857)
Secondary Reduction Ratio . . . . .	36 / 17 (2.118)
Transmission Oil . . . . .	0.3 L.
Clutch Type . . . . .	Dry, Multiple disk
Transmission Type . . . . .	Constant Mesh 6-speed.
Gear ratio 1st. . . . .	30 / 15 (2.000)
Gear ratio 2nd. . . . .	27 / 17 (1.588)
Gear ratio 3rd. . . . .	26 / 19 (1.368)
Gear ratio 4th. . . . .	27 / 22 (1.227)
Gear ratio 5th. . . . .	26 / 23 (1.130)
Gear ratio 6th. . . . .	29 / 27 (1.074)

**CHASSIS**

Overall Length . . . . .	1800 mm
Overall Width . . . . .	510 mm
Overall height . . . . .	1010 mm
Wheelbase . . . . .	1220 mm
Minimum Ground Clearance . . . . .	110 mm
Caster Angle . . . . .	22.2°
Trail . . . . .	81 mm
Lean Angle left . . . . .	53°
Lean Angle right . . . . .	53°

**WEIGHT**

Dry weight . . . . .	70 Kg.
Race ready . . . . .	82 Kg.
Fuel tank capacity . . . . .	13 L.

**STEERING SYSTEM**

Steering Bearing Type . . . . .	Taper Roller Bearing
Steering Angle (left / right) . . . . .	17°

**FRONT SUSPENSION**

Front Suspension . . . . .	Telescopic Up Side Down Front Fork
Front Shock Absorber . . . . .	Coil Spring / Oil Damper
Front Damping Adjustment . . . . .	Compression & Rebound
Front Fork Travel . . . . .	104 mm
Inner Tube outer diameter . . . . .	36 mm
Wheel travel . . . . .	104 mm

\* Specifications are subject to revision and change without notice.

**REAR SUSPENSION**

Rear Suspension . . . . .	Monocross Link Swing arm
Rear Shock Absorber . . . . .	Coil - Gas Spring / Oil Damper
Rear Damping Adjustment . . . . .	Compression & Rebound
Shock Absorber Travel . . . . .	50 mm
Pivot Shaft Bearing type . . . . .	Needle 28x22x20
Wheel travel . . . . .	116 mm

**WHEELS**

Front Rim size . . . . .	2.5 x 17
Front Rim material . . . . .	Aluminium
Front Tire size . . . . .	2.65 / 3.25 - 17
Rear Rim size . . . . .	3.50 x 17
Rear Rim material . . . . .	Aluminium
Rear Tire size . . . . .	115 / 65 - R17

**BRAKES**

Front Brake type . . . . .	Single Disc with 4 pot caliper
Disc outside diameter & thickness . . . . .	282 x 4 mm.
Rear Brake type . . . . .	Single Disc with 2 pot caliper
Disc outside diameter & thickness . . . . .	185 x 4 mm

**ENGINE**

Type . . . . .	Liquid cooled 2-stroke
Cylinder arrangement . . . . .	V-Type 2-cylinder
Displacement . . . . .	249 cc
Bore & stroke . . . . .	56.0 x 50.7 mm
Compression ratio . . . . .	8.3:1
Maximum power . . . . .	84.0 HP / 12.000 rpm
Maximum torque . . . . .	5.05 Kgm. / 11.750 rpm
Ignition system . . . . .	CDI
Carburation . . . . .	Mikuni TM38 x 2
Spark plug . . . . .	NGK R5184-105
Lubrication . . . . .	systemPremix

**TRANSMISSION**

Primary reduction ratio . . . . .	52/20 (2.600)
Secondary reduction ratio . . . . .	36/15 (2.400)
Transmission oil . . . . .	0.5 L
Clutch type . . . . .	Dry, Multiple disk
Transmission type . . . . .	Constant Mesh 6-speed
Gear ratio 1st . . . . .	28/14 (2.000)
Gear ratio 2nd . . . . .	31/21 (1.476)
Gear ratio 3rd . . . . .	26/21 (1.238)
Gear ratio 4th . . . . .	27/25 (1.080)
Gear ratio 5th . . . . .	26/27 (0.963)
Gear ratio 6th . . . . .	20/22 (0.909)

**CHASSIS**

Overall length . . . . .	1942 mm
Overall width . . . . .	650 mm
Overall height . . . . .	1085 mm
Wheelbase . . . . .	1328 mm
Minimum ground clearance . . . . .	130 mm
Caster angle . . . . .	22.8°
Trail . . . . .	81.5 mm
Lean angle left . . . . .	53°
Lean angle right . . . . .	53°

**WEIGHT**

Dry weight . . . . .	99 kg
Race ready . . . . .	120 kg
Fuel tank capacity . . . . .	23 L

**STEERING SYSTEM**

Steering bearing type . . . . .	Taper Roller Bearing
Steering angle (left/right) . . . . .	21°

**FRONT SUSPENSION**

Front suspension . . . . .	Telescopic Upside Down Fork
Front shock absorber . . . . .	Coil Air Spring / Oil Damper
Front damping adjustment . . . . .	Compression & Rebound
Front fork travel . . . . .	110 mm
Inner tube outer diameter . . . . .	41 mm
Front wheel travel . . . . .	110 mm

\* Specifications are subject to revision and change without notice.



**REAR SUSPENSION**

Rear suspension . . . . .	Link Swingarm
Rear shock absorber . . . . .	Coil Gas Spring / Oil Damper
Rear damping adjustment . . . . .	Compression & Rebound
Shock absorber travel . . . . .	57.5 mm
Pivot shaft bearing type . . . . .	22 x 33 x 25
Rear wheel travel . . . . .	135 mm

**WHEELS**

Front rim size . . . . .	3.75 x 17
Front rim material . . . . .	Aluminium
Front tire size . . . . .	3.25/4.70-R17
Rear rim size . . . . .	5.25 x 17
Rear rim material . . . . .	Aluminium
Rear tire size . . . . .	165/60-R17

**BRAKES**

Front brake type . . . . .	Double disk
Disc outside diameter & thickness . . . . .	248 & 5 mm
Rear brake type . . . . .	Single disk
Disc outside diameter & thickness . . . . .	160 & 4 mm