
2005 Montesa COTA 4RT PRESS INFORMATION

Introduction

With a history reaching back nearly as far as motorcycling itself, the unique spectator sport of Observed Trials competition has grown to become an internationally popular motorsports event which places greater emphasis on rider skill and finely honed technique than on the usual attractions of top speed and maximum power. Held both indoors over often incredible constructions of daunting obstacles, and outdoors over some of the most difficult and treacherous terrain in the world—with steep, twisting, slippery slopes and seemingly insurmountable rocky outcroppings—trials competition is now highly regarded as an ultimate test of steady nerves and intense concentration.

Honda has also enjoyed a long history of involvement in Observed Trials competition, both under its own name and together with one of the biggest and best known names in the sport, Montesa. Working in close co-operation with Honda, Montesa-HRC (Honda Racing Corporation) riders have dominated the world's top levels of trials competition in recent years, and Honda's future in the sport remains bright.

Trials bikes have, for many years now, been powered almost exclusively by 2-stroke engines, which are certainly renowned for providing strong power in a compact and relatively simple configuration. Unfortunately, these attributes also come at the cost of highly polluting emissions, poor fuel economy and annoying engine noise. However, big changes are now on the horizon.

Long considered such a small and insignificant branch of motorsports as to be immune to the advances of ever more stringent international

environmental controls, now even the relatively closed world of Observed Trials is being called upon to take greater responsibility for the protection of our shared environment, and because of this concern the run of polluting, inefficient 2-stroke engines now appears to be coming to an end. In fact, new regulations scheduled for introduction in the 2006 racing season will be calling for much stricter compliance with new emissions controls, which will surely spell the end of the 2-stroke engines currently used in World Trials competition.

Anticipating these momentous changes, Honda has spared no effort to meet the future head-on with every advanced technological development it has on hand. As always, the company's ultimate goal is not merely to grudgingly conform with the expected demands of new government regulations, but to do so in a way that surpasses everything that has gone before with stronger, more competitive performance, and Honda's trademark of unprecedented innovation that shows the world a new way of looking at old problems.

Rather than feebly worrying about how to preserve the sometimes bad old ways, Honda's teams of engineers boldly set out toward the future with new developments in a remarkable new machine which will change the course of history in Observed Trials competition, just as Honda has in many other sport and commercial enterprises throughout its long history of involvement with and development of the internal combustion engine. The results of these efforts now speak for themselves in the form of a new test machine making its debut in the 2004 racing season, and in a new-generation trials bikes that will surely be taking the world by storm — the new Montesa COTA 4RT.

Development Concept

In May of 2004, at the 4th round of the World Outdoor Trials Championship, held at Twin Ring Motegi Circuit in Japan, Honda and HRC debuted a revolutionary new 4-stroke trials machine that is destined to change the face of Observed Trials competition forever, the impressive RTL250F. Powered by a unique, compact, and remarkably quiet new liquid-cooled 4-stroke 4-valve engine, the RTL250F set the entire motorcycling world abuzz with its undeniable portent of exciting things to come, and then went on to back its bold visual statement up

with strong top-ten showings at its very first public demonstrations in the two rounds held at the event.

Besides being powered by a newly developed liquid-cooled 4-valve 4-stroke engine, the remarkable new RTL250F also featured the first adoption of electronic fuel injection ever seen in a motorcycle competing at the top levels of World Trials competition. Other innovations also abound in the sleek new RTL testbed, and all were eventually slated to turn up in a revolutionary new production trials machine now proudly being introduced to Europe as the new 250cm³ Montesa COTA 4RT (“For Racing Trials”).

Heralding a new age in trials competition, the new COTA 4RT is powered by a further refined version of the RTL250F’s remarkable fuel-injected 4-stroke engine, and is poised to claim its crown as the unrivalled new champion of the World Trials series in the years ahead, with a balance of performance and reliability that doesn’t merely meet, but categorically exceeds that of its long-established 2-stroke competition.

Bearing a close visual resemblance to the latest trials machines now used by the Montesa-HRC team, the new COTA 4RT carries its revolutionary new 4-stroke engine in an ultra lightweight and slim, yet ruggedly constructed aluminium twin-spar frame fitted with world-class suspension and chassis components, and styled for a dawning new age in the world of trials competition.

With all this and the close co-operation of Montesa and Honda ensuring that every part of its remarkable whole is imbued with the most advanced technologies and highest quality of construction, the new COTA 4RT now sets the stage for a new era of trials competition, just as Honda’s now legendary RC211V has changed the course of history in the world’s premier supersports racing arena, the MotoGP circuit. The new age of 4-stroke power has finally arrived on the World Trials stage, and contrary to the dire predictions of doubters and pessimists, as the new COTA 4RT demonstrates beyond a shadow of a doubt, the future couldn’t be brighter.

Styling

Setting a new standard in lightweight trials bike design, the fantastic new COTA 4RT presents a sleek and organic design that incorporates all the finest attributes of form following function. In order to optimise its rider's operating ease and abilities, every surface, from its lightweight twin-spar aluminium frame to its minimalist bodywork was formed and curvaceously shaped to conform to a rider's every movement, acting as a perfectly balanced extension of the rider's very being, while providing sensitive feedback for optimum control, and reacting with smooth, almost telepathic response.

With fuel tank and exhaust system beautifully integrated into the lines of its chassis and sleek bodywork, the new COTA 4RT is truly a rider's machine, providing the singular balance and ease of operation that assures an unrivalled combination of strong performance and confident control that will come to dominate the trials circuit in the years ahead.

To mark this new age of trials bike development now being heralded with the debut of the revolutionary new Montesa COTA 4RT, Montesa has also designed a new logo, which exudes a more modern and dynamic image in keeping with the pioneering image of this exceptional new machine.

Colouring

The radical new COTA 4RT stands out in the distinctive red and silver racing livery associated with the world champion Montesa COTA competition lineup, leaving no doubt about who is dominating the winners' podium this year.

Colours

- Montesa Red

Engine

The sleek and highly competitive new COTA 4RT heralds a new age in production trials bike design with its lightweight and compact new liquid-cooled 4-stroke engine providing a solid foundation of strong, dependable performance to prevail over all rivals in the fiercely challenging courses encountered at the top classes of World Trials competition. Based on the advanced 4-valve engine developed for the high-powered new CRF250R motocross racer, which has been grabbing major accolades and awards for its winning performance since debuting in 2003 on the All-Japan Motocross Championship circuit, this new engine received a battery of important modifications designed specifically to assure its success in all levels of trials competition.

The COTA 4RT's compact power plant was carefully engineered to provide precisely the power characteristics most required for successful trials competition and winning performance. Compact size and light weight are, of course, critical factors in creating a winning machine for trials competition, and these factors play an even more important role in designing a 4-stroke engine to compete in the same displacement class as the 2-stroke engines that have dominated the top class in recent years.

Extensive efforts were made to lighten this new power unit wherever possible, while maintaining competitively strong performance in the face of the lighter and technically more powerful 2-stroke competition. Engine cases were modified to achieve more compact proportions and the greater ground clearance required in trials competition, while the base engine's balancer shaft was designed out of the COTA 4RT's new performance equation in order to further minimise weight.

New SOHC Head Design

The engine's 4-valve head configuration was one of the first things targeted for modification. Realising a more compact overall shape while still maintaining the same highly efficient combustion chamber design of its predecessor was a key design requirement, so valve actuation is performed by a single overhead cam operating conventional rocker arms instead of the Unicam system utilised by the higher-revving CRF250R.

While cylinder proportions and their corresponding performance characteristics were refined with a smaller bore and longer stroke, the engine's sleeveless 'slipper' piston uses a 3-ring design instead of the 2-ring version used in the CRF to ensure better sealing in the type of competitive operation it was specially designed for.

This new engine compensates for its slightly reduced low-end torque output compared to its 2-stroke competitors by offering stronger and smoother midrange output for an optimised balance of power and control.

Advanced New Off-Road Fuel Injection System

A revolutionary new development in trials bike engine design debuting on the new COTA 4RT is Honda's—and the world's—first application of its most advanced fuel injection system in a trials bike application. Providing instant response and smoothly predictable performance, this lightweight and remarkably simplified new fuel injection system was specially designed for the COTA 4RT's unique trials application to provide a precisely metered fuel delivery for the smooth, unruffled operation and responsive control required in this demanding sport.

Roughly based on the integrated PGM-FI system first introduced on the Honda's 2003 Pantheon scooters, this revolutionary new off-road system integrates the throttle body and all the digital electronic control of its ECU into a single, lightweight unit installed in the position conventionally taken up by a carburettor. The injector itself is an 8-hole unit mounted directly to the engine head.

The system's built-in sensors monitor such variables as intake port air pressure and air temperature while monitoring engine speed at the ACG's pulsar, making instantaneous calculations to assure top performance and minutely responsive control under all operating conditions, even at high altitudes that can often prove difficult to tune for with conventionally carbureted engines. Needless to say, the black art of jetting selection is now a thing of the past.

Battery-Free Starting

The new COTA 4RT also features a high-accuracy digital ignition system that maintains optimal timing and top performance through the engine's entire rev range, from first startup to high-revving power leaps over giant obstacles.

However, one of the most significant developments in this system is its battery-free operation, which powers up this entire electronic system with the voltage generated by a simple kick of the starter lever.

The engine also features a larger size and capacity ACG, which produces ample output for all the COTA 4RT's electrical needs while also increasing crank mass for smoother operation and easier driveability. A simple yet effective switching system diverts all the ACG's output to the fuel injection and ignition systems during kickstarts to ensure quick and easy starts, then releases output to other operating essentials, such as the radiator fan and lights, once the engine is up and running.

The first system of its kind in the world, this new battery-free starting system ensures quick and reliable starts in all sorts of weather and altitude conditions, generating a strong spark and instantly optimised timing and fuel feed to ensure quick starts at the kick of its lever, and strong, reliable performance everywhere.

Geared for Conquest

The COTA 4RT's specialised engine modifications don't stop there, though. Once the engine's power characteristics were determined, it falls to the transmission to take full advantage of its performance aspects and turn them into a widely usable power delivery. Here, new transmission ratios compensate for the engine's lower torque (compared to a 2-stroke engine of the same approximate displacement) while maximising its stronger midrange power delivery to achieve the high-traction surge of acceleration and smooth, predictable control that trials riders need most and can best use. A difficult blend of performance to achieve, but remarkably well accomplished in the new COTA 4RT.

As any trials rider knows all too well, peak power figures are essentially irrelevant to winning performance in their unique form of competition. What counts is strong, yet smoothly predictable low-to-midrange power output that can carry a machine and its rider over monstrous obstacles and often slippery surfaces with equal ease. Finesse, not brute force, is the ultimate key to victory.

The engine's slightly higher rpm operation permits the transmission to be geared with lower ratios than normally used in this class, delivering not only a comparable range of performance, but also astoundingly competitive performance, as evidenced by RTL250F's impressive back-to-back 9th place finishes in its dramatic first test debut at the Japan round of the 2004 World Trials Championship.

The COTA 4RT's transmission also features a light-action hydraulic clutch, which provides smooth and highly linear clutch actuation for superb feel and precise performance. Transmission gears and ratios were also carefully selected to achieve both lighter overall weight and fully optimised driveability over every sort of trials course imaginable.

Sleekly Integrated Exhaust System

Looking at first glance like a beautifully formed extension of the COTA 4RT's elegantly constructed aluminium frame, the wide, full-coverage heat shield concealing the engine's large-volume exhaust system sweeps upward and back to follow the lines of its tail with attractive complementary curves. The silencer's larger volume maximises the engine's production of low-end torque for greater low-to-midrange power output.

Overall, the COTA 4RT's 4-stroke power delivery and range of performance is unlike anything ever before experienced in the world of trials competition, and comparisons to other 2-stroke machines are difficult, though the difference in response felt by its rider is a revelation on wheels. The main points of focus for any rider, however, will surely be its remarkable smoothness and the confident grunt of tractable midrange performance that comes on strong and linearly with each twist of its throttle.

Chassis

The new COTA 4RT carries its new 4-stroke engine in a slim and lightweight all-aluminium twin-spar frame which grips the engine in a diamond configuration for an optimised balance of rigidity and riding performance. This new composite section frame, like the COTA 4RT's entire chassis, has also been specially designed for lighter weight and sleeker proportions that enhance rider manoeuvrability and control.

Although the COTA 4RT's new liquid-cooled 4-stroke engine—including its revolutionary new fuel injection system—is somewhat heavier than the other 2-stroke engines in its class, this weight difference has been more than made up for in an extensively detailed weight loss campaign carried out in the rest of the COTA 4RT's sleek and beautiful form. From narrower and thinner-walled frame sections to smaller and lighter individual parts, everything was intensively studied, revised, and revised again in the quest for minimised weight and top performance, with the resulting frame alone achieving a weight savings of fully 1.6kg over the Montesa COTA 315R. All these weight-saving features combine to make the COTA 4RT comparable in weight to its current 2-stroke competition.

Even the COTA 4RT's tiny 2,1 litre fuel tank conceals advanced new technology in the form its highly compact and extremely lightweight integrated fuel pump, which starts delivering its high-pressure charge of fuel to the PGM-FI system's injector the very instant the kickstart lever is used to turn over the engine. No batteries required! Needless to say, its revolutionary 4-stroke engine's miserly fuel economy and micro-managed fuel injection system combine to allow the COTA 4RT to go much farther on its 2,1 litres of fuel than comparable 2-strokes carrying larger quantities, even the COTA 315R.

Advanced Long-Travel Suspension

Honda's long years of experience in trials bike development assures the new COTA 4RT has one of the finest suspension systems in the sport. An advanced, fully adjustable Showa 39mm cartridge-type front fork provides excellent feedback and control, smoothly soaking up the shocks of everything from rocky climbs to high drops. At the rear, the COTA 4RT's progressive Pro-Link rear suspension system delivers a precisely adjustable balance of spring and damping to better help a rider leap up vertical tests and tenaciously maintain

traction up their slippery faces. Settings have, of course, been specially tuned to fit the COTA 4RT's new overall design, making possible a precisely measured fit for riders of varying weights and needs.

Lightweight Wheels, Tubeless Rear Tyre

In the COTA 4RT's quest for lighter weight, even its wheels received detailed modifications in the form of a significantly lighter, new 32-spoke configuration, replacing the 36-spoke format used on the latest Montesa COTA 315R, on which the new COTA 4RT is roughly based.

Also like the COTA 315R, the new COTA 4RT uses an innovative rear wheel design that features centre-adjustable spokes mounted at one end to tangentially located blocks protruding from a compact hub, and anchored at the other end to solid plates built into the inside perimeter of the solid rim. This wheel design permits the mounting of a large, lightweight tubeless tyre offering excellent performance.

Light, Responsive Disc Brakes

The COTA 4RT's wheels are stopped by responsive hydraulic disc brakes front and rear, with a small but strong 4-pot front calliper stopping a slim 185mm rotor. Gripping a small-diameter 150mm rotor, the compact dual opposed-piston rear brake calliper is mounted out of harm's way along the inside surface of the swingarm's rigid box-section aluminium spar, rather than in the usual location either above or below the swingarm.

Equipment

Homologation Kit

The Montesa COTA 4RT will be fully equipped with a complete on-road kit, including front and rear lights, turn indicators, speedometer, horn, steering lock and license plate bracket, that allows it to be ridden legally on public roads. These components have also been designed for easy detachment by customers who wish to pursue more competitive off-road-only applications.

Optional Equipment

Performance Tuning Kit

For competition riders who want the freedom to electronically tune the COTA 4RT's ignition and fuel injection mapping systems for better performance, Honda Racing Corporation (HRC) will be supplying a specially designed fuel injection kit as optional race equipment. The kit will be distributed by Montesa Honda S.A, and contains:

- New throttle body and ECU module
- Interface
- CD-ROM
- Harness

This kit will allow customers and mechanics to reprogramme the original ignition and fuel injection mapping by way of a laptop computer.

In addition, HRC has also developed a fuel injection system self-diagnostic programme which will allow customers and mechanics to follow a troubleshooting procedure using an easy to understand warning lamp code. This programme will also be distributed by Montesa Honda S.A. For more information, please contact Montesa Honda S.A.

Montesa and Trials

The Montesa factory was founded in 1945, and for many years it specialised in the production and manufacture of motorcycles powered by 2-stroke engines. Production was mainly focused on on-road models, and despite the fact that observed trial competition was becoming a popular sport in some countries like Great Britain, it wasn't until 1967 that Montesa produced its first model of this speciality: the Montesa Trial 250. One year later, this model was completely changed and re-introduced as the first Montesa COTA in history, the legendary Montesa COTA 247.

From that time forward to the present day, the Montesa factory never stopped manufacturing multiple versions of the COTA model, which gradually

won the company international prestige as a great brand, while accumulating an enormous number of victories in virtually every kind of national or international competition.

However, the company's most important victory arrived in 1980, when Ulf Karlsson won the Trial World Championship riding a prototype of the future and equally successful Montesa COTA 349, which one year later brought Montesa a new World championship, and the Manufacturers' title as well.

1983 was also a very important year for Montesa. Following years of struggle in a weakened economic climate, the company forged an agreement of mutual co-operation with Honda Motor Co., which would lead to the creation of a new organisation, Montesa Honda S.A. The consolidation of this agreement was achieved in 1986, just as the recently created new Montesa Honda S.A. factory started production of Honda models, which were then released to both domestic and international markets.

In 1994, Honda Racing Corporation (HRC) participated in the development of the Montesa COTA 314R, a model that signalled a major turning point in Montesa trials history. Its engine was fully developed in HRC's facilities in collaboration with Montesa Honda, and although it achieved some brilliant results that year in the Trial World Championship, it was not quite able to claim the crown. Still, the COTA 314R's development base was a good one, and led to the creation of a model that would come to be unbeatable, the COTA 315R prototype that Marc Colomer rode to his Trial World Championship crown in 1996. This historic victory propelled HRC, again in co-operation with Montesa Honda, to develop a new model for all trial fans, which was finally born in 1997.

Later, in the hands of the phenomenal Dougie Lampkin, the Montesa COTA 315R won a successive total of four new overwhelming Trial Indoor/Outdoor World Championships in '00, '01, '02, '03. And as of this writing, the Repsol Montesa HRC team is fighting again for its fifth consecutive Constructors' victory in the 2004 World Championship.

Today, Montesa Honda is a modern factory, with a sparkling new production plant established in 2000 at Santa Perpetua de la Mogoda, Barcelona, where at present a total of 6 models are produced, among these the majestic Varadero 1000, the only ABS-equipped motorcycle manufactured in Spain. This same plant will be producing the new Montesa COTA 4RT and the

Honda HRC RTL250, which is being made exclusively for the Japanese market, as well as future world champions to come.

IMPORTANT DATA

CURRENT REPSOL MONTESA HRC TEAM RIDERS

- Dougie Lampkin
- Takahisa Fujinami
- Marc Freixa
- Laia Sanz

TRACK RECORD

- 7 Outdoor World Championships: '80, '81, '96 '00, '01, '02, '03 (& the possible win of the 2004 title)
- 5 Indoor World Championships: '95, '96, '99, '00 & '01
- Victory in the 2002 Scottish Six Days Trial

Specifications

Montesa COTA 4RT (ED-type)

ENGINE

Type	Liquid-cooled 4-stroke 4-valve SOHC single
Displacement	249.1cm ³
Bore × Stroke	76.5 × 54.2mm
Compression Ratio	10.5 : 1
Idling Speed	1,800min ⁻¹
Oil Capacity	Engine: 0.6 litres; Transmission: 0.57 litres

FUEL SYSTEM

Carburation	PGM-FI electronic fuel injection
Throttle Bore	28mm
Aircleaner	Viscous, urethane foam filter
Fuel Tank Capacity	2,1 litres

ELECTRICAL SYSTEM

Ignition System	Computer-controlled digital transistorised with electronic advance
Ignition Timing	27° BTDC (idle) ~ 45° BTDC (10,000min ⁻¹)
Sparkplug Type	CR6EH-9 (NGK)
Starter	Primary kick
ACG Output	160W

DRIVETRAIN

Clutch	Wet, multiplate with coil springs
Clutch Operation	Hydraulic
Transmission Type	5-speed
Primary Reduction	3.166 (57/18)
Gear Ratios	1 2.800 (42/15)
	2 2.384 (31/13)
	3 2.000 (30/15)
	4 1.272 (28/22)
	5 0.814 (22/27)
Final Reduction	4.100 (41/10)
Final Drive	#520 roller chain

FRAME

Type Diamond; Aluminium twin-spar

CHASSIS DIMENSIONS

Dimensions (L×W×H)	2,016 × 830 × 1,130mm
Wheelbase	1,321mm
Caster Angle	23°
Trail	63mm
Seat Height	650mm
Foot Peg Height	390mm
Ground Clearance	335mm
Dry Weight	73,2 kg
Kerb Weight	75,2 kg

SUSPENSION

Front 39mm Showa cartridge-type telescopic fork with 22-step adjustable compression and 20-step rebound damping, 175mm axle travel

Rear Pro-Link with Showa single damper, stepless compression and 12-step rebound damping adjustment, 170mm axle travel

WHEELS

Type	Aluminium rim/wire spoke
Rim Size	Front 21 × 1.60 Rear 18 × MT2.15
Tyre Size	Front 2.75–21 Rear 4.00–18
Tyre Pressure	Front 39 – 44kPa Rear 29 – 34kPa

BRAKES

Front 185 × 3.5mm hydraulic disc with 4-piston calliper and sintered metal pads

Rear 150 × 2.5mm hydraulic disc with dual-piston calliper and sintered metal pads

All specifications are provisional and subject to change without notice.