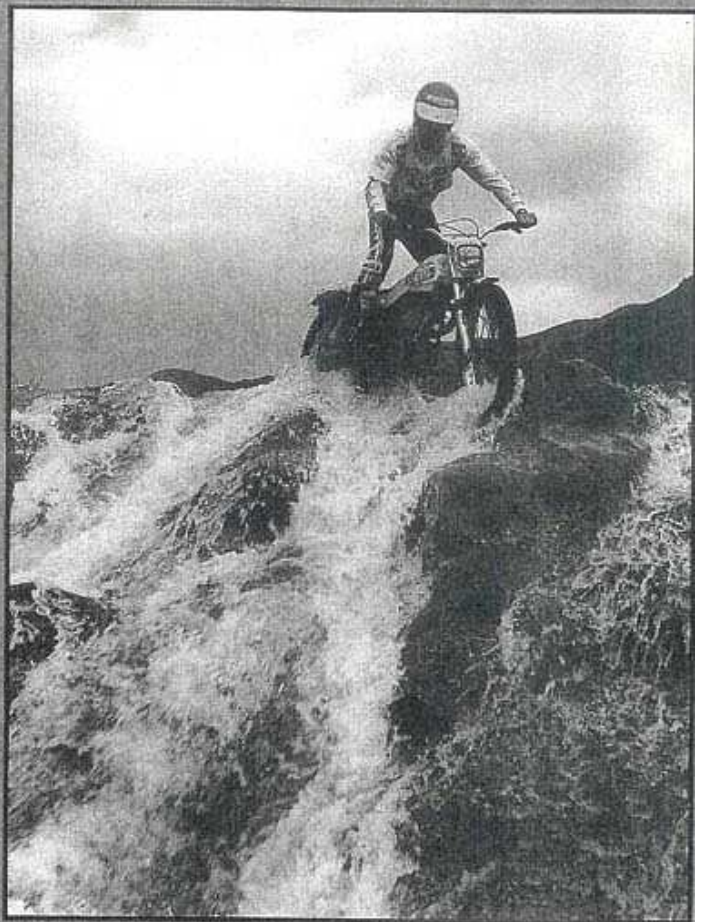


# CLEAN MACHINES

A balancing act in five parts

BY LEN WEED



Strange though it may seem, there is only one form of dirt riding competition in which the competitor is allowed to make nary an error, and it is the sport with the lowest top speed to boot. Get out of shape in a motocross, and a healthy application of right wrist will often straighten you out. Fail to make it up a hill in an enduro, and you can almost always take another crack at it.

But in observed trials, the tiniest dab of foot to earth carries a penalty, with an increasing number of marks lost should you resort to padding to get through a section or ride out of bounds by accident.

Every move a trials rider makes in a section is carefully scrutinized by an official observer or two and by fellow competitors. The pressure to perform must be similar to what an Olympic gymnast feels on the balance beam.

Due to its uniqueness, the trials bike is quite unlike other mounts destined for off-road use. Dynos—which are so useful in measuring peak horsepower and torque, as well as their curves—don't quantify throttle response, which is of the utmost importance to the observed trials rider.

Put a motocrosser on a trials bike and he'll tell you the suspension is way too soft... which it is for motocrossing. In trials, with its slower speeds and terrain better suited for mountain goats, the rider's legs do much of the work.

The frames haven't changed much since the '60s and Sammy Miller's Bultacos. Like speedway bikes, trials machines have undergone refinement rather than revolution.

Due to the subjective subtleties of the sport—the counterplay between finesse and aggressive riding—it's difficult to line up several different trials bikes and say, "This is the one, no doubt about it."

No, in trials the rider picks what *feels* best to him—how the engine responds, how the bike steers, its balance, its ability to hold a line.

*Dirt Rider* contacted eight distributors for this evaluation—Bultaco, Cagiva, Can-Am, Fantic, Italjet, Montesa, Ossa and SWM. Five participated; the other three did not have bikes available at the time (please see the accompanying sidebar). In order to fairly evaluate the machines, we brought together five nationally-sponsored riders, each representing one of the five participating brands, and a motojournalist who is a national support class competitor. To ensure their complete objectivity while discussing the bikes, we have not attributed any of their comments.

Our experts included: Bernie Schreiber, 1979 World Champion and defending American Champion, for SWM; Scott Head, 13th in the world last year on an Italjet and second in America in 1980 before heading overseas in '81 and '82, for Montesa; Dwaine Walters, currently tied for second in the '83 National point standing, for Fantic; Lane Leavitt, America's first and three-time National champ, for Italjet; and Mike Lauxen, currently second to Walters in the '83 SoCal point standings, for Cagiva. *Dirt Rider* also talked to Jack Stites, runner-up in last year's U.S. championship.

Each of the five bikes was analyzed individually, with comments of the sponsored riders followed by statements by the rest of the evaluation group.

PHOTOS: LEN WEED

## CAGIVA

Cagiva (pronounced Ka-gee-va) North America opened its doors during the summer of 1982. The parent company in Italy specializes in tool and die stamping for the computer and aerospace industries. Cagiva diversified into motorcycles in 1976, mostly due to the owner's interest in the sport, by purchasing the Aeromacchi/Harley-Davidson factory that manufactured the Harley two-strokes sold here in the '70s. Cagiva is also Harley's Italian importer.

Since venturing into motorcycles, Cagiva has steadily increased their operation. During the first six years, sales more than quadrupled to about 45,000 units. The company projects an increase to 60,000 units for 1983.

Currently only dirt models are being imported, but, in the future, the distributor hopes to bring in a line of four-stroke dirt and street bikes. The bikes sold in Europe are called Merlins, but are distributed here with the Cagiva name plate.

The DG3.50 trials bike was added to the North American line last spring. The DG3.50's engine, frame and components are manufactured at Cagiva in Italy and then assembled in Spain by Merlin.

Former Bultaco notables Ignacio Bulto and Manuel Soler are involved with the Merlin effort. Soler and Gabino Renales have scored world points this year, the first on the circuit for Merlin/Cagiva. The bikes ridden by Soler and Renales at the Texas world trials last April were shipped west to the distributor. A local shop, Bay Area Cycle Center, suggested that one of their riders, Mike Lauxen, try the bike at a local two-day. Lauxen signed to ride with the distributor shortly thereafter.

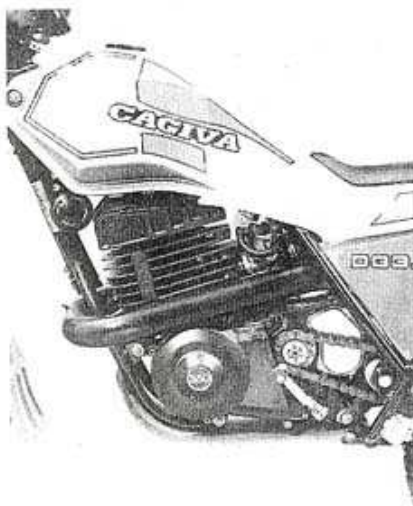
For our test, Lauxen brought out the bike ridden by Renales. It featured an experimental baffle in the exhaust system. The baffle, designed to smooth out the power, gave the exhaust a potato-in-the-pipe sound. It's distracting but functional. The stylish-looking fiberglass tank reflects the bike's Spanish heritage. Plastic is now preferred for trials tanks, but the Cagiva's container seemed quite sturdy.

Lauxen evaluated his new ride by saying, "It wants to turn, steer, stay in a straight line, whatever you want it to do. The front end is nice. The bike really likes loose rocks; it doesn't throw you off to the side. Once I got the carburetion straight, it ran perfectly."

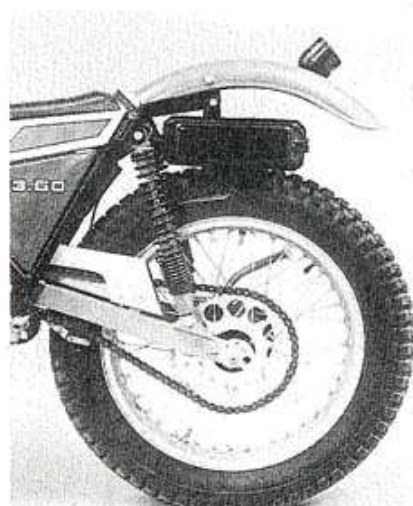
Group comments: *Probably the neatest handling Bultaco I've ever been on. It's the best steering bike I've ever ridden. You can tell Ignacio Bulto and Manuel Soler are involved with it. The rear suspension is very good. The bike feels light and nimble. The motor is flat on the bottom. If they get the motor sorted out, the bike will be superb... The biggest problem is taking a multi-purpose engine and modifying it for trials, but the people working on it know what they're doing. The chassis is already right... It comes on like a Fantic, but smoother....*



The new, Spanish-developed Cagiva DG3.50 is already scoring world points.



The Cagiva's fiberglass gas tank is sturdy and stylish. The motor has a long 68mm stroke.



Betor shocks, traditionally favored by Spanish manufacturers, are found on the Cagiva.



Cagiva needs to refine bottom-end power to match the excellence of the chassis.



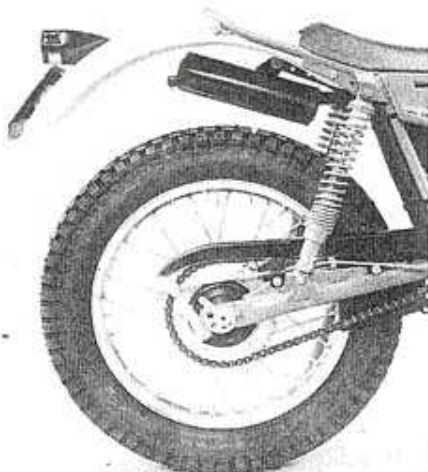
The Cagiva's fork is made by Betor. All five bikes use Akront aluminum rims.



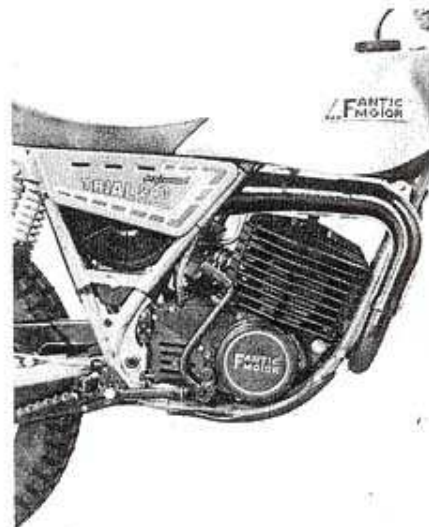
The Fantic 240 weighs under 200 pounds and makes as much power as the bigger bikes.



Fantic's 212cc motor produces exceptional power for its size. Compression is 11.7:1.



The Fantic had the longest swingarm and wheelbase among the five test bikes.



A forward kick starts the Fantic. The six-speed motor is fed by a 25mm Dell 'Orto carburetor.



Leading axle fork on the Fantic is manufactured by Marzocchi.

The Cagiva-built bike is already scoring world points and battling for the Spanish championship. The steering is excellent. The chassis, offering the tallest ground clearance and lowest seat of any bike evaluated here, is ahead of the engine right now. The Cagiva offers different styling, a different name and a package put together by some of the people who used to build the most successful bike in trials. It'll be interesting to see how close they can come to that standard this time around.

## FANTIC

Small engines, big results—that's the Fantic story. In less than five years, Fantic has become the best-selling trials bike in the world. The factory now claims over 50 percent of the market.

Fantic began building mopeds and minicycles in 1968. Their model line now includes cross-country and enduro motorcycles as well, but their trials bikes, introduced in 1978, are Fantic's best sellers.

The 240 (really a 212cc) Trial Professional is currently their largest displacement bike, but a larger model (rumored to pull anywhere from 280 to 320cc) is expected by year's end.

Fantic's world team consists of 1981 World Champion Gilles Burgat (France), John Lampkin (England), Nicholas Desnoyers (France) and Jaime Subira (Spain). Subira manages the team and supervises development input from the riders. Two other promising French riders, Pascal Couturier and Adrien Prato, the latter serving as the team trainer, are distributor sponsored.

The Fantic team in America includes Curt Comer (1981 National Champion), Steve McNeal, Dwaine Walters and Mike West (1982 High School champion).

Fantics are imported here by TMI. Four-time AOTSCA sidecar trials champion Chuck West heads the operation. West, a chemist and former sports car racer, launched the Tryals Shop in 1974. Today it's the nation's largest trials mail order company. West sold the business in 1980 to concentrate on selling bikes. He had planned to market his own TMI200 powered by a 200cc Honda engine but decided to import Fantics instead. Promotional effort and team results have produced a steady sales increase, allowing the brand to close the sales gap between itself and SWM.

The 240 first appeared in the fall of 1981. The 1983 version includes double tubing for the downtubes—a first for trials machinery. A smaller tube is inserted inside both of the exterior downtubes to improve rigidity. This year's model also has some porting changes, modified fork damping and better, water-resistant brake shoe material.

Many wonder how a 212cc bike can win in world and national competition against machines displacing more than 300cc. Fantic feels their in-house quality

control and computerized dyno development enables them to obtain their power. Fantic uses higher compression plus extremely close tolerances to achieve their results. (Their bore and piston tolerance is one-half of one one-thousandth.) Their chrome liner is claimed to help heat transference by about 30 percent. In addition, massive aluminum finning improves engine consistency. And while the 240 engine produces almost the same peak horsepower as the larger engines, it does so anywhere from 500 to 1500 rpms sooner. This explains why the power may feel "pipier" to some riders.

Fantic's powerplant is closer to "square" than those of the other bikes included in this evaluation. The factory wanted as long of a long-stroke engine as possible for better torque. The 240's stroke measurement is only 3.5mm shorter than the Italjet's or Bultaco's. The bore is 11 to 14mm smaller.

Our evaluation bike was Dwaine Walters' personal machine, inherited from Gilles Burgat after the Texas world round last April. The bike was equipped with Marzocchi shocks which have since become standard. A new ignition and a repositioned (farther forward) handlebar mounting were also added.

Walters' appraisal of his bike: "It's stable, quick, good for the tight stuff. I ride everything in second gear. Last year when I switched to Fantic, I thought the smaller engine might be a problem. My family (both of Walters' parents used to compete in trials) thought it wouldn't pull me around. Then I rode it . . ."

Sales increased in California once Walters joined Fantic. "You just can't let people look at the bike, you have to get them to ride it. Once people began trying the bike, that's when it began selling. I get such good traction, especially in the wet stuff. The smaller motor comes on quick, but the rear wheel doesn't spin or break loose. The bike works. Burgat won two world trials on it last year. Lampkin won in Texas this year."

Group comments: *A marvelous little bike. Very light, nimble. It steers well. Good rear suspension. Smooth motor. You have to charge more, ride the bike faster. It could use more weight on the rear wheel . . . You have to get used to the power. The suspension is excellent . . . With some bikes, you lean them some and steer into a turn. With the Fantic, you can really lay it over . . . You have to make adjustments for the high compression, light flywheel engine approach. There's good throttle feel, you know exactly what it'll do. You just have to get your speed earlier . . . Second gear is better, it's smoother and faster and delivers more manageable power . . . You have to be aggressive and ride it very accurately, understanding just how much power you'll have to get up something . . . The powerband isn't as progressive. The power comes on with a snap in the middle. If you stay below or*



Italjet's 350 Piuma is much lighter and whiter than their previous all-green models.



Italjet's 350T has a 83.2 x 60mm bore and stroke. A 28mm Dell'Orto mixes the fuel.



The Italjet's seat height tied for lowest of the five test bikes. Shocks are by Marzocchi.



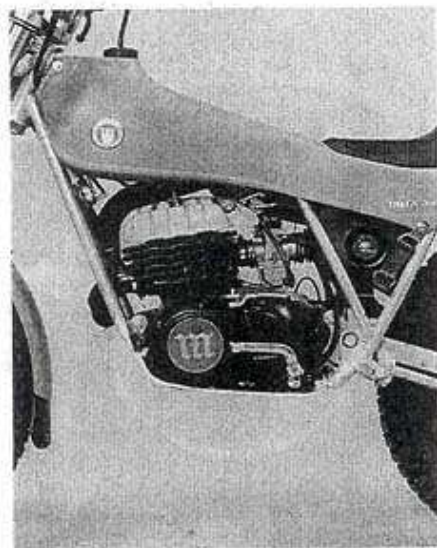
The right-side shifter shown on the Italjet is available as an accessory option.



The Italjet 350T has a 35mm Marzocchi fork. The Pirelli tires are standard equipment.



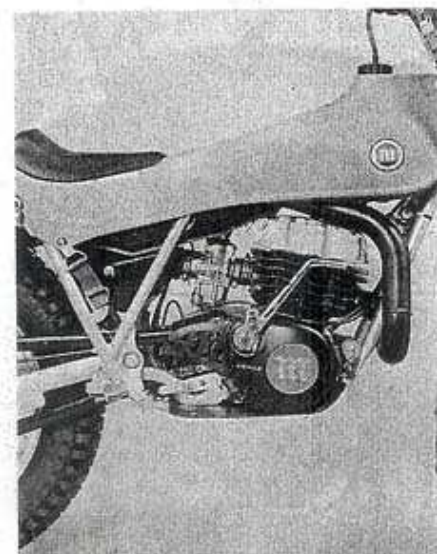
At \$2099, the Montesa 349 Cota is the least expensive of the five test bikes.



The 349.6cc motor in the Montesa Cota is currently the largest available.



The Cota features Betor shocks. The enclosed chain shield is unique to Montesa.



Montesa's motor uses a 27mm Amal carburetor. Primary kickstarting is not standard.



Montesa makes their own fork. Distance between the fork legs was widened for 1983.

above that, you're okay, but that's not always easy to do in sections . . .

There's no argument with Fantic's sales success. The company claims they are shooting for 60 percent of the world market in 1983. The 240 is a sub-200 pounder, weighing from seven to 12 pounds less than the Cagiva, Italjet or Montesa. This makes the bike appealing to younger or smaller riders, despite its tall seat. The long wheelbase and swing-arm are probable pluses for novice riders because they offer greater straightline stability.

Fantics seem to do especially well in technique trials because of their lightweight handling and their gradual power at low rpm settings. At the same time, the bikes have proven their ability to produce just about everything the bigger bikes do in world competition. Fantic's strategy for building an appealing, entry-level bike that can perform at championship levels should continue to prove successful.

## ITALJET

Italjet entered the trials arena rather spectacularly in 1980 after signing Bernie Schreiber in mid-season. Mechanical problems kept Schreiber out of the points in his first two rides, but he then won an unprecedented (and still unequalled) four straight events on a pre-production Italjet prototype some refer to as the Green Bul-taco.

However, the 1981 production model varied from the bike Schreiber had been so successful on in 1980. After struggling throughout the '81 season on the much heavier bike, Schreiber moved on to SWM at year's end.

Scott Head rode for Italjet in 1981 and 1982. Their current factory rider is Philippe Berlatier, the best-scoring world rookie since Schreiber in 1977.

Schreiber's initial success on the Italjet prototype generated tremendous public interest in the bike, but the subsequent overweight production model cooled much of the enthusiasm. Development during the past two years has concentrated on eliminating the pounds the factory originally added in order to build a super-durable bike.

Before venturing into trials, Italjet was best known to Americans for their mini-motocrossers. The company began manufacturing minicycles in 1966 and built the motors for the Indian mini-racers imported here through 1975.

Then, in 1976, they began marketing mini-racers here in the United States. Italjet minicycles have won numerous national titles. The current Paul Denis Replica is named after the four-time national champion who now races 125cc support for Kawasaki. Jeff Ward, Brian Myerscough, Mike Brown and Lance Moorewood all raced for Italjet during their younger days.

Italjet USA currently imports the mini-racers and the 350T trials bike. Four other trials models—50T, 100T, 125T and

250T—are available on special order. On the horizon is a series of 350cc four-stroke models for 1984—a street enduro, a street cafe and a trials/trailer.

The 1983 model features a new frame and a four-pound weight loss. The footpegs were relocated. A color switch from all-green to green-and-white was made after the American distributor received their shipment of bikes. New white accessories are now available.

The 1984 model, called the Piuma (Italian for feather), is already out in Europe and is expected here early next year. This is the bike currently ridden by Bertier in world competition. This Piuma is nine pounds lighter than the '83 version, making it one of the lightest large displacement bikes available—just seven pounds heavier than the 240 Fantic. Extensive use of aluminum helped to trim the poundage. The exhaust system was also lightened, as were the plastic pieces. Other changes included porting, a skid plate modification, redesigned footpegs and kickstarter, a new front brake lever and rear brake pedal, an engine mounting bracket switch and a change to Marzocchi suspension. A switch-over kit is available for those who prefer right-side shifting.

The production Piuma ridden by Bertier in Texas was shipped west for Lane Leavitt who provided development input for the past year and a half. The Italjet's durability really impressed the three-time American champion: "Longevity-wise, Italjets are superb, incredibly dependable. They haven't sold a piston for one of them yet. The frame is very strong and rigid. It'll stay straighter, longer, than the other bikes. There's also an extra set of bearings in the crankshaft and in the rear wheel for greater dependability. They changed the porting in the new bike and have added a double-lip seal on the mag side. With the old single lip, you could go lean from air leaks.

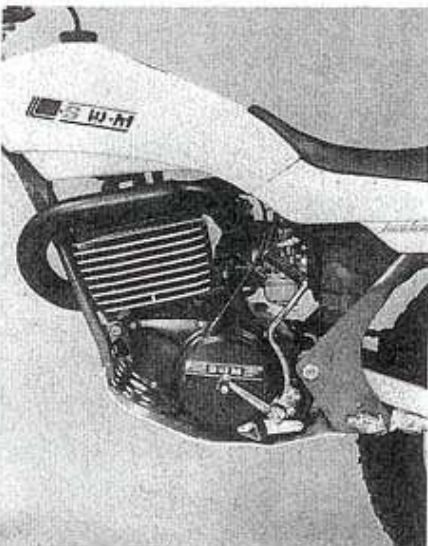
"The bike's biggest plus is that it maintains a high standard of handling performance for a long time. Most bikes tend to flex too much after they've been ridden for a while. The average guy can't get a new bike every 10 events like a factory rider.

"The engine is very similar to a Bul-taco—bore and stroke, porting and piston—but it seems to run a bit stronger for some reason."

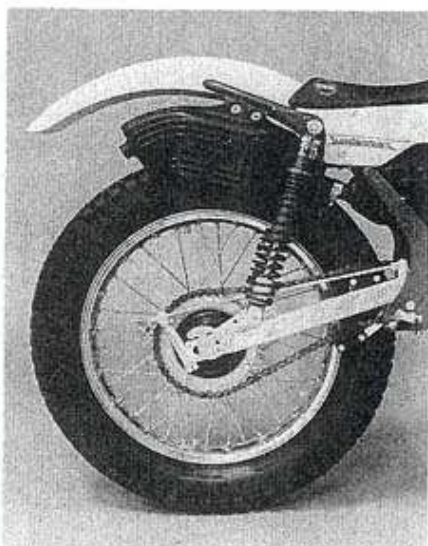
Group comments: *The motor has good top end, it could be a bit smoother at lower rpm... It does wheelie turns very easily, but sometimes tends to keep turning... The rear wheel seems to be connected to the throttle like a Bul-taco... Moving the pegs back and down and lightening the frame are two big improvements. They're a lot closer to building the bike Schreiber thought they were going to build in the first place... If you want a trials bike for trail riding, this has to have the sturdiest chassis available....*



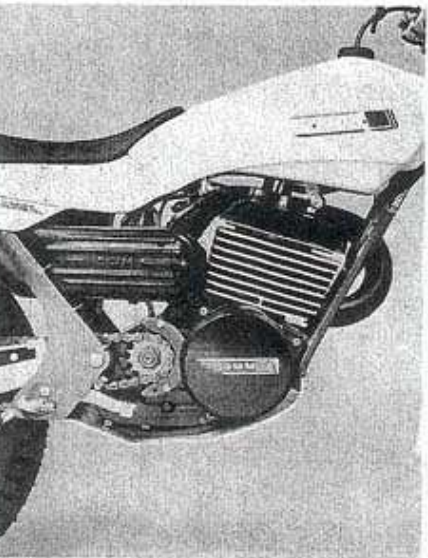
SWM's 350 Jumbo is the lightest, most powerful large displacement bike currently available.



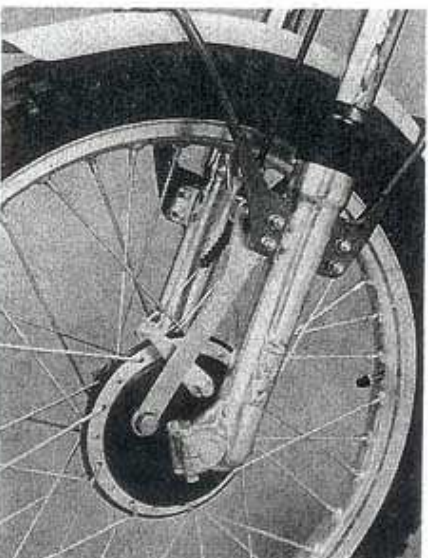
The Jumbo's displacement is 348.5cc. The single-beam frame is an SWM innovation.



SWM fits Betor gas shocks on the Jumbo. The aluminum swingarm is a production first.



SWM offers the most powerful motor currently available from a trials manufacturer.



SWM introduced the first 38mm fork on the Jumbo. It's built for them by Betor.



Our trials-test experts (from left): Bernie Schreiber (SWM), Dwaine Walters (Fantic), Scott Head (Montesa), Lane Leavitt (Italjet), and Mike Lauxen (Cagiva).

Despite recent improvements, Italjet still faces some lingering market resistance created by its 1981 heavyweight model. The Piuma is a better bike than the image many have held of Italjets in general. No longer overweight and visually more attractive, it deserves increased market support. Continued event successes should help.

## MONTESA

Montesa, incorporated in 1947, is the oldest of the three Spanish manufacturers that once dominated the trials market. They've won two world championships with Don Smith in 1969 and Ulf Karlson in 1980. Montesa also won three consecutive American championships, 1979 through 1981, with Marland Whaley and Curt Comer aboard, respectively.

Jack Stites and Don Sweet, winners of the Arizona and California Nationals earlier this year, are on Montesa's National team, along with Canadian champion Stan Bakgaard, Brad Skreen and a couple of recently signed riders, Scott Head and Kip Webb. The American importer supports a total of 11 riders in national championship competition. Overseas, Toni Gorgot, winner of this year's Scottish Six Days, is Montesa's top man, backed up by former bicycle trials whiz Andreu Codina.

Cosmopolitan Motors imports four Cota trials model—the 123, 200, the brand-new 242 and the 349—in addition to the Cota 25c, a 50cc pint-sized trialer, and the T15 trials bicycle developed by Codina.

The 349 Cota was introduced in 1980, replacing the 348 (actually a 306cc).

Several changes appear in the 1983 model:

- New frame and a semi-banana swing-arm. The rear triangle of the frame is now welded rather than bolted on.
- Longer Betor shocks.
- Reinforced front hub.
- Reshaped kickstarter lever.
- Beefier pegs, moved back on the frame.
- Plastic tank/seat unit.
- Porting and exhaust modifications.
- Michelin tires.
- Increased distance between the fork tubes.

In addition to the pivoting tank/seat unit (introduced in 1976 with the 348 Cota), the current model offers several features unique to Montesas:

- Semi-enclosed chain protector. This plastic guard helps to clean the chain of mud and also minimizes the chance of derailing.
- Automatic chain oiler. A hose from the gearbox vent transfers oil mist to an opening in the chain cover.
- Swingarm oiler. An oil-filled tube fitted into both ends of the swingarm provides lubrication.
- Adjustable clutch and brake levers.

Our evaluation bike was a stock '83 that Scott Head received just the week before. His tryout session impressed him enough to sign with Cosmopolitan to ride the remainder of the National series.

About his new ride, Head said, "The first thing I noticed was the engine, the amount of power and its smooth delivery.

The bike is easy to move around, feels stable on loose surfaces and offers a stable platform to ride on. It lifts easily for a wheelie turn, but doesn't keep turning beyond the point you want it to. The 349 turns very tightly. I noticed that I don't have to lean the bike into a turn as much as some bikes. That lets me keep my body centered for balance with less effort. The swingarm shape (curved at the rear) really helps. The bike seems to roll over the top rather than bouncing on steps."

Jack Stites offered these comments about the Montesa: "The bike doesn't feel like it was designed on a computer; it's been built by trials people. This model offers a good compromise between tight turns and straight sections. The earlier models were longer and harder to turn. Sometimes the bike does something I don't really understand in a section, but it always works out to my advantage."

Group comments: *The best Montesa ever. A good motor. The frame is better than it used to be, much more like a Bultaco now. The geometry is very forgiving. The bike is excellent for straightline sections. Look at the results of the Scottish. (Recent winners of the Six Days on Montesas include Malcolm Rathmell—1979, Yrjo Vesterinen—1980 and Toni Gorgot—1983.) . . . The motor is very good. The bike really grips the ground. That may be because the steering angle isn't as steep as some bikes . . . It shifts smoother now than it used to . . . The power comes on a dime . . .*

The 349 Cota is a proven bike from a long-time, trials-oriented factory and offers the largest displacement motor available in a production trials bike. Straightline handling is excellent. Turning was improved by the new chassis. Montesa has traditionally led the way with innovative and functional bits and pieces. The 349's price, the lowest of the five bikes included in this report, makes it a real bargain.

## SWM

Contrary to rumor, SWM doesn't stand for Speedy Works Motors. SVVM would actually be more accurate—the initials of the two partners, Sironi and Vergani, with another V for Vermercate, the town in which the first factory was located. Today, SWM is based 15 miles east of Milan.

SWM was the first Italian manufacturer to enter the trials market. Production began in 1978. The company, formed in 1971, initially specialized in enduro bikes with excellent results. Italy was and still is ISDE oriented. SWM has also won Italian motocross championships.

Piero Kuciukian, a dentist and sidecar trials champion who serves as the manager of the trials team, sparked the factory's interest in trials. He suggested that the SWM give Italy a world caliber trials bike.

The first SWM racers used Sachs mo-

tors. Then the company contracted with Rotax to supply all their engines. Although the company did buy the Tau motor concern last spring, it is expected that the Rotax motor will be used for trials for quite some time to come. The Tau motors may be used for some of the race bikes.

A rotary-valved 280 engine, marketed in the 320 model, was the factory's largest trials powerplant until the 350 Jumbo was released this year.

SWM signed French champion Charles Coutard in 1978. Since then, Kuciukian has scouted and signed a number of talented riders, including 1981 world champion Gilles Burgat.

The current factory team includes Bernie Schreiber (USA), Thierry Michaud

(France) and Danilo Galeazzi (Italy). Another top ten rider, Bernard Cordonnier, is supported by the Belgian distributor. The American team includes Schreiber, Morgan Kavanaugh, Keith Adams and Dave Pyle.

SWM bikes are distributed here by SWM USA, headed by Ron Saum, a former General Motors engineer who competes in the national series. The arrival of a much improved (yellow) model at about the same time (1980) as Bultaco's strike problems helped boost sales here. Today, SWM is the most popular brand in America's national series.

SWM first began working on the 350 Jumbo in 1981. Larger 399cc and 366cc versions proved too rowdy to tame. The

Jumbo was first displayed to the public at the 1982 Scottish Six Days Trial. Martin Lampkin rode it in the Italian world round later, but that was one of the bike's few appearances in 1982 competition. SWM generally prefers to develop by testing and then compete on production bikes.

The factory team began riding the 350 at the beginning of this year's series. Schreiber gave the model a successful debut with a win in Spain. Michaud also won with the Jumbo at the French world round.

The Jumbo's case reed engine is a first for trials. The model also boasts several other firsts:

- First aluminum swingarm. It doesn't save that much weight, but it does im-

Model	Montesa Cota 349	Fantic Trial 240 Professional
Price	\$2099 .....	\$2479 .....
Distributor	Cosmopolitan Motors ..... Jacksonville & Meadowbrook Avenues Hatboro, PA 19040 215/672-9100	TM ..... Route 14, Box 259 Cookeville, TN 38501 615/526-4829
<b>ENGINE</b>		
Type	Two-stroke..... single cylinder, air-cooled	Two-stroke..... single cylinder, air-cooled
Displacement	349.6cc .....	212cc .....
Bore x stroke	83.4 x 64mm.....	69 x 56.5mm.....
Compression ratio	8.5:1.....	11.7:1.....
Carburetion	27mm Amal.....	25mm Dell'Orto.....
Ignition	Motoplat flywheel magneto .....	Dansi electronic .....
<b>DRIVE TRAIN</b>		
Transmission	Six-speed, helical gears.....	Six-speed, helical gears.....
Primary drive	3.2:1.....	3.38:1.....
Primary kickstart?	No .....	Yes.....
Final drive	4.00:1 (10/40) .....	3.25:1 (12/39) .....
Gear ratios (internal)	1st 3.00:1 2nd 2.41:1 3rd 1.73:1 4th 1.28:1 5th 0.87:1 6th 0.60:1	1st 3.25:1 2nd 2.40:1 3rd 1.83:1 4th 1.42:1 5th 1.00:1 6th 0.70:1
<b>CHASSIS</b>		
Frame	Chrome-moly..... double-cradle with integral skid plate	Chrome-moly equivalent..... double-cradle
Front suspension	Montesa fork (35mm).....	Marzocchi fork (35mm).....
Rear Suspension	Betor shocks.....	Marzocchi shocks.....
Brakes	Internal expansion .....	Internal expansion .....
Wheels	Akront aluminum .....	Akront aluminum .....
Tires, front	Michelin 2.75-21 .....	Michelin 2.75-21 .....
rear	Michelin 4.00-18 .....	Michelin 4.00-18 .....
<b>MEASUREMENTS</b>		
Weight (wet, no fuel)	210 lbs. ....	198.5 lbs. ....
Weight distribution	45.5/54.5% .....	45.8/54.2% .....
	(F/R, wet, no fuel)	(F/R, wet, no fuel)
Wheelbase	51.9 in. ....	52.25 in. ....
Fuel capacity	5.5 liters (1.43 gallons) .....	4.5 liters (0.94 gallons) .....
Ground clearance	12.9 in. ....	12.75 in. ....
Seat height	30.9 in. ....	32 in. ....
Swingarm length	16.6 in. ....	17.75 in. ....
Footpeg height	15.2 in. ....	15.75 in. ....
Footpeg to front axle	36.75 in. ....	37 in. ....
Footpeg to rear axle	14.6 in. ....	14.75 in. ....
Front axle to center of crank	25.6 in. ....	26.9 in. ....
<b>MISCELLANEOUS</b>		
		Comes with optional 11-tooth ..... countershaft sprocket. Folding shift lever.



prove torsional rigidity. That makes the bike track straighter with less flex to affect steering input.

- First 38mm diameter fork tubes.
- First use of bellcrank leverage to soften clutch lever pull. The lever is mounted atop the engine under the gas tank.
- First open cradle single beam frame.
- There is no triangulating tube between the lower frame plate near the footpegs and the frame top tube. A T-brace off the top tube serves as a frame member and head stay to reduce annoying engine vibration.

The switch in frame design reflects one of the curious aspects of trials engineering. Most world class riders prefer a certain amount of the "right" kind of flex in

the chassis to absorb impact. Schreiber, in particular, is a keen advocate of this controlled frame flex for better section performance.

We rode Schreiber's Jumbo. His personal preferences include a lower, more forward positioning of the handlebar, stiffer engine reeds for quicker bursts of power, wider footpegs and Girling gas shocks.

The increase of more than 70cc definitely suited Schreiber's style. "With the world sections as difficult as they are, the larger engine gives me more confidence," Schreiber stated. "I can use higher gears and a lot less body energy. I used to try to help the 280 with my body sometimes; now I just turn on the power.

Mud is much easier to ride. I use second or third gear most of the time. Second is great. It's long and not too fast. I can shut off, come right back on, and the power's there.

"I repositioned my bars to make the front end heavier. I don't want the front end to lift as easily on big steps. This makes the bike more stable for me, but unless you're going up world class steps, it isn't necessary.

"The aluminum swingarm is a big plus. It's more rigid. That makes the tires grip even better. The frame is flexible in the right places, but strong where it has to be so it won't bend or stretch."

Group comments: *The motor is the finest part of the bike. The SWM does ev-*

SWM 350 Jumbo	Cagiva DG3.50	Italjet 350T
\$2675.....	\$2530.....	\$2295
SWM USA.....	Cagiva North America.....	Italjet USA
8336 East Willetta	469 North Oak	13148 Satlicoy Street
Mesa, AZ 85207	Inglewood, CA 90302	North Hollywood, CA 91605
602/986-3060	213/412-7838	213/982-2000
Two-stroke,.....	Two-stroke,.....	Two-stroke,
single cylinder, air-cooled	single cylinder, air-cooled	single cylinder, air-cooled
348.5cc.....	341.8cc.....	326cc
82 x 66mm.....	80 x 68mm.....	83.2 x 60mm
9.6:1.....	9.6:1.....	9.0:1
28mm Dell'Orto.....	28mm Dell'Orto.....	28mm Dell'Orto
Bosch flywheel magneto.....	Motoplatt electronic.....	Motoplatt flywheel magneto
Six-speed, straight-cut gears.....	Five-speed, straight-cut gears.....	Six-speed, helical gears
3.68:1.....	2.80:1.....	2.809:1
Yes.....	Yes.....	Yes
2.92:1 (13/38).....	4.00:1 (11/44).....	4.40:1 (10/46)
1st 3.40:1	1st 3.27:1	1st 3.00:1
2nd 2.67:1	2nd 2.62:1	2nd 2.33:1
3rd 1.93:1	3rd 1.88:1	3rd 1.72:1
4th 1.39:1	4th 1.24:1	4th 1.27:1
5th 1.10:1	5th 0.77:1	5th 0.92:1
6th 0.76:1		6th 0.69:1
Chrome-moly.....	Chrome-moly.....	Chrome-moly,
open cradle single beam with	double cradle	single cradle with integral skid plate
integral skid plate		
Betor fork (38mm).....	Betor fork (35mm).....	Marzocchi fork (35mm)
Betor gas shocks.....	Betor shocks.....	Marzocchi shocks
Internal expansion.....	Internal expansion.....	Internal expansion
Akront aluminum.....	Akront aluminum.....	Akront aluminum
Michelin 2.75-21.....	Pirelli 2.75-21.....	Pirelli 2.75-21
Michelin 4.00-18.....	Pirelli 4.00-18.....	Pirelli 4.00-18
197.25 lbs. ....	204.25 lbs. ....	205.25 lbs.
44.5/55.5% .....	45.8/54.2% .....	45.6/54.4%
(F/R, wet, no fuel)	(F/R, wet, no fuel)	(F/R, wet, no fuel)
52 in. ....	51.9 in. ....	52 in.
5.0 liters (1.18 gallons).....	5.0 liters (1.18 gallons).....	5.5 liters (1.43 gallons)
12.5 in. ....	13 in. ....	12.5 in.
31 in. ....	29.75 in. ....	29.75 in.
17.5 in. ....	16.12 in. ....	16.25 in.
14.5 in. ....	15.6 in. ....	15.12 in.
38 in. ....	37 in. ....	37.6 in.
12.75 in. ....	14.12 in. ....	14 in.
29.75 in. ....	29 in. ....	27.25 in.
Folding shift lever.....		Optional conversion kit for right-side shifting available.

## A QUICK LOOK AT BULTACO, CAN-AM, AND OSSA

Can-Am distributes the English-built Armstrong under their trade name in North America. The bike is currently ridden by British points leader Steve Saunders. John Lampkin, winner of this year's American world trial, rode for Armstrong in 1982.

Armstrong, an automotive parts manufacturer, diversified several years ago by purchasing three English motorcycling companies. One of the three purchases was CCM, the company Alan Clews began with BSA remnants. Later, Clews switched to a Hiro-powered two-stroke bike.

A new Armstrong 320 model, which made its debut at last spring's Scottish Six Days, will be imported here this fall.

A price of \$1750 for a proven, Spanish-built trials machine is quite a bargain. Maybe that's why Ossa USA sold every one they imported. Ossa USA is owned by the Slater Brothers, who also import Laverdas. They've been distributing Ossas in the United States for the past three years.

Ossa experienced great success a decade ago when Mick Andrews won back-to-

back world championships. However, interest in the trials market may have slipped recently. The factory has not sponsored a name rider on the world circuit for a couple of years.

A limited number of Bultaco 348 Sherpas (\$2340) are available in the U.S. A nine-month strike in 1980 ended the factory's domination in both competition and sales, though the factory had won seven straight world championships from 1973 through 1979.

The company, now operated by its workers, streamlined itself down to 120 employees last spring. (The strike resulted when management attempted to trim the company down to 300 employees.)

Bultaco also announced last spring that the long rumored merger with, or acquisition by, Derbi was off since Bultaco received new financing from the government.

Meanwhile, three-time world champion Yrjo Vesterinen has continued development in England. It is possible that a new model could be in production for 1984.

## INTERNATIONAL TRIALS TODAY

The last five years have seen remarkable changes in world trials:

*Dramatic, new riding techniques, including hops, stops, backups, slingshots and nose wheelie turns.* A change in the forward motion rule now permits stopping or even backing up in a section without penalty—provided the rider balances without support. Riders now bounce, hop, jerk or roll their bikes into position to unfighten turns or to attack obstacles. A forefinger on the clutch lever is standard operating procedure—to stop, recover revs, lower a rising front end, control forward motion while holding a steady throttle or shift gears within the sections.

*A rethink on engine design.* Engine designs today tend to place more emphasis on acceleration, less on engine braking. Riders work the clutch and rear brake to creep along when necessary.

*A shift in section layout philosophy from wide, multiple-line challenges to tighter and more abrupt tests.*

*Super-grip Michelin factory tires.* The introduction of super-sticky Michelin factory tires in 1981 permitted even more radical riding. The world's top riders have access to four different rear tire compounds suited to different terrain conditions and temperatures. The super-grip tires allow the riders to stop, turn up the throttle, release the clutch and slingshot at the next section challenge without spinning. As a result, world sections now include steeper steps approached by tighter turns.

*Italy is replacing Spain as the sport's major manufacturer.* Italy now builds and sells more trials bikes than any other nation. For years, Spain held that distinction. The Spanish manufacturers (Bultaco, Ossa, Montesa) won the first 13 European/World championships until Gilles Burgat ended that string in 1981 on an SWM.

Italy may soon have renewed competition from Japan. Honda is releasing a 200/250 four-stroke this year, at least for the European market, and Yamaha is preparing two single-shock bikes for production.

*France is replacing England as the most successful developer of top riders.* The inventors of the sport, the English, no longer dominate world trials. After winning the first eight European/World titles, the English have drawn blanks since 1976. France is now the dominant nation, boasting about half of the top dozen riders in the world. The country is likely to remain on top for some time because of their super-tough national series, as well as their summer training camps geared to developing promising young riders. France will get a chance to assert its superiority in the fall of 1984 at the first annual Trials des Nations in Poland.

*An expansion to spectator-oriented indoor arenas and outdoor stadium trials.*

*A dominance by riders in their teens and early 20s.* Top world competitors are getting younger. The new riding techniques require intensive training and lightning reflexes. At 24, Bernie Schreiber is already the oldest rider among the world's best.

## INCHES, POUNDS AND PERCENTAGES

Weighting and measuring the five test bikes produced both expected and unexpected numbers:

Bike weights, with the gas tank empty, ranged from 197.25 pounds (SWM) to 210 pounds (Montesa). A surprise was the 350 Jumbo which weighed less than the 240 Fantic.

Ground clearances varied from 12.5 to 13 inches.

Engine locations, relative to the front axle, produced measurements from 25.7 inches (Montesa) to 29.75 inches (SWM).

Peg heights ranged from 14.5 inches (SWM) to 15.75 inches (Fantic).

Peg positioning in front of the rear axles ranged from 12.75 inches (SWM) to 14.75 inches (Fantic).

Front wheel weight distributions varied from 44.5 percent (SWM) to 45.8 percent (Fantic, Cagiva). The Jumbo's engine (and footpegs) was the farthest back from the front axle. Of course, when the bike is ridden, the front end is even lighter because the footpegs are positioned closer to the rear axle than on any other bike. The Montesa had the second lightest front end despite having the most forward positioned engine (and pegs).

Wheelbase measurements ranged from 51.9 inches (Montesa, Cagiva) to 52.5 inches (Fantic).

The swingarms measured from 16.1 inches (Cagiva) to 17.75 inches (Fantic).

Seat heights ranged from 29.75 inches (Cagiva, Italjet) to 32.0 inches (Fantic). The tall seat on the Fantic was a surprise because of the bike's popularity with smaller and younger riders.

*everything good, but the motor is exceptional. It's ideal for the pull-the-clutch-rev-it-up-and-accelerate type of riding used today. But with all that power, the bike might be harder to handle for average riders than some other bikes... A rider getting on this bike from another, like a Fantic, will have a whole lot of power to get used to. The front (on the stock bike) is very light and too much throttle input can bring it up on steps... The motor is ungodly—if you know how to use it. The power is smooth. It's like a super-large Fantic motor. It could be the ultimate enduro motor....*

The SWM is the lightest expert bike available. With a short wheelbase, a light front end and the most powerful trials engine in production, the 350 Jumbo is SWM's perception of what today's trials rider wants and needs for today's sections. Less weight, less length, less engine braking, more acceleration and a softer clutch—the Jumbo reflects its manufacturer's commitment to building a thoroughly modern trials motorcycle. While the 350 is not for everyone, the bike is right on target for the segment of the market it's aimed at. DR

# CLEAN MACHINES

A Bicycling guide to the best bikes

BY GUY BERTS



**S**ome of the most exciting and challenging riding you can do is on a motorcycle. Whether you're a beginner or a seasoned rider, there's always something new to learn and discover. In this guide, we'll take you through the best bikes for different types of riding, from street bikes to off-road bikes. We'll also cover the latest in motorcycle technology, from engine options to suspension systems. So whether you're looking for a new bike or just want to learn more about the world of motorcycles, this is the guide for you.