

SPECIAL: FAIRING BUYER'S GUIDE!

MOTORCYCLIST

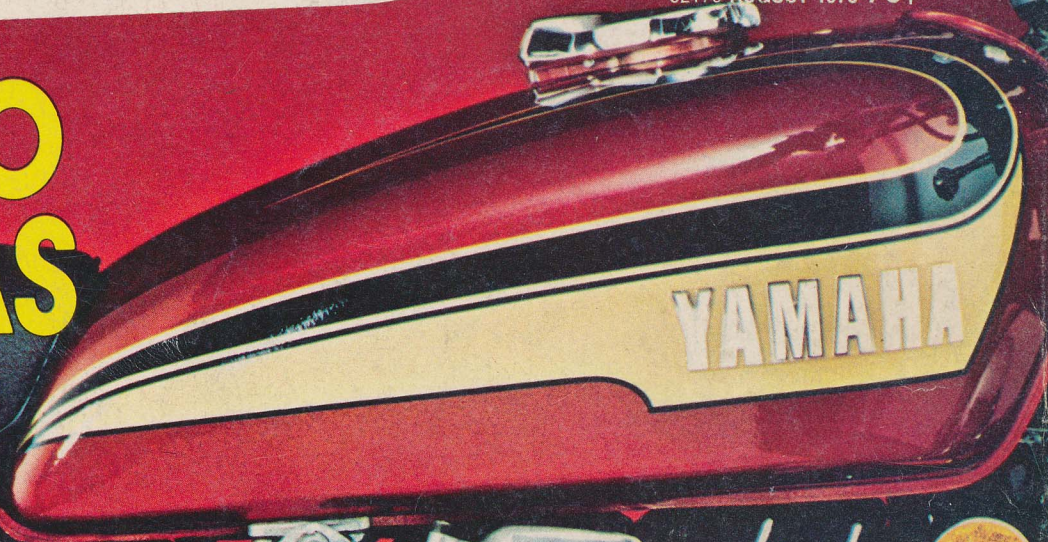


Motorcyclist

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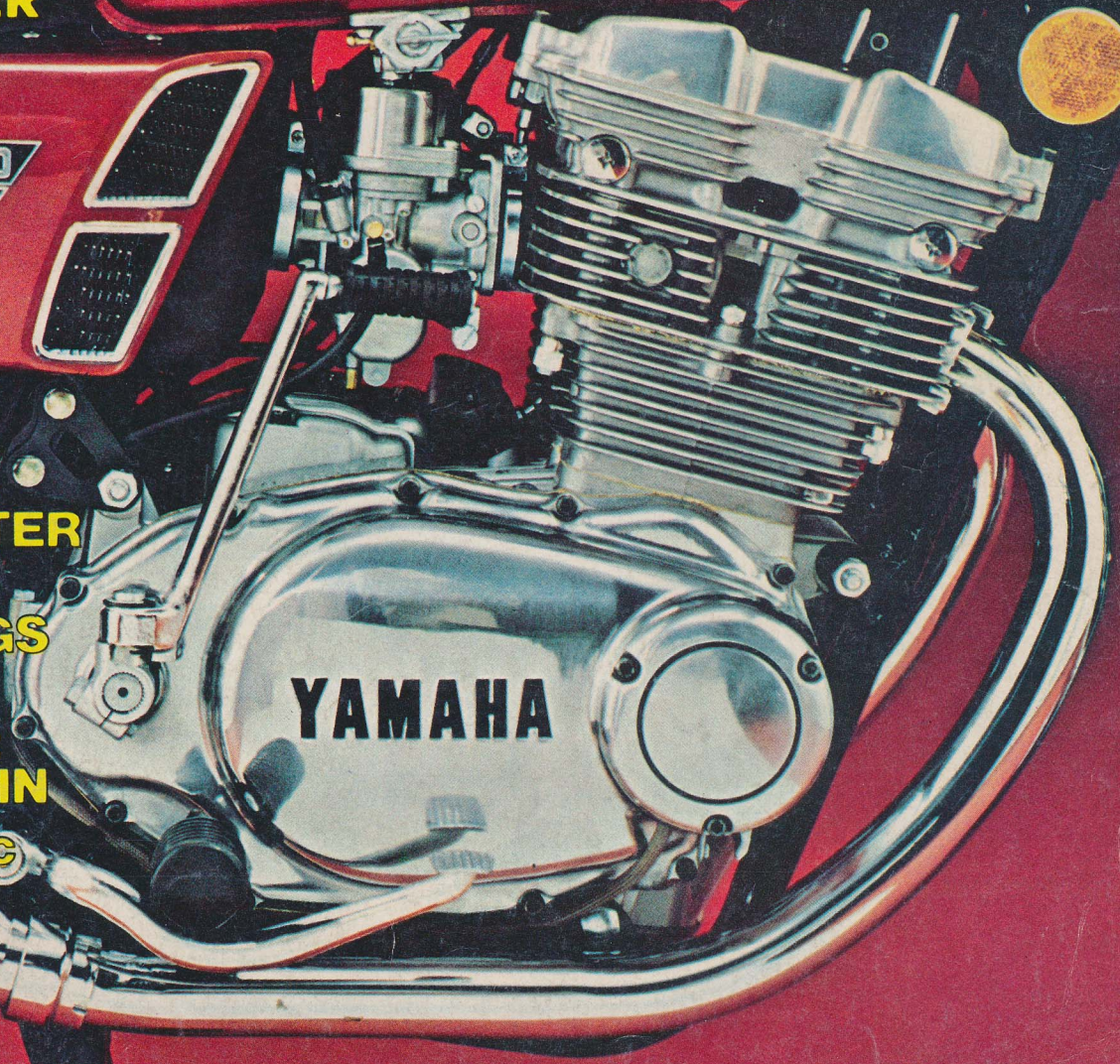
TWO 500 YAMAHAS

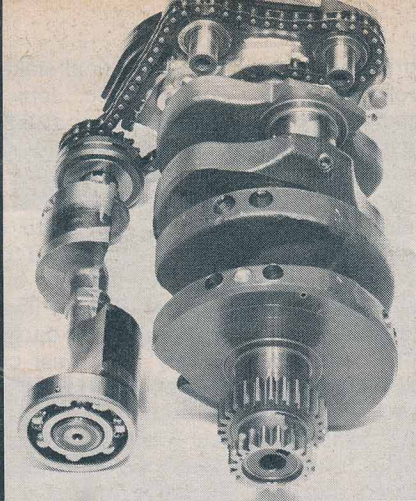
8-VALVE DOHC
VERTICAL TWIN
EARTH-SHAKER
DIRT SINGLE



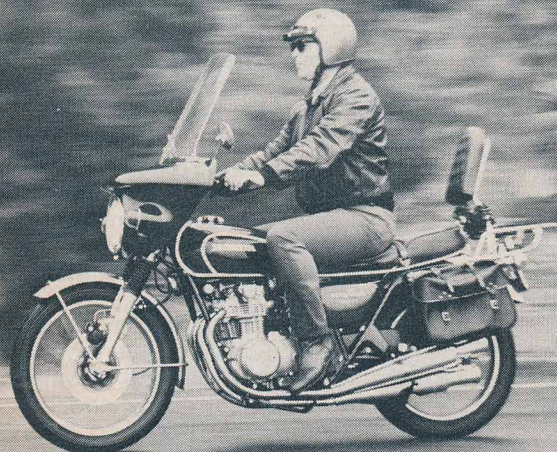
DOHC 500
EIGHT VALVE

HOW TO:
MIKUNI CARB
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KIT FOR BSA
500 MX!





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COVER

Exotic . . . sophisticated, you name it and it's Yamaha's new TX500. Dual overhead cam four-stroker with four valves per cylinder only starts to tell you about this one.

For full details, check the seven-page test beginning on page 20. Photography by PPC Photographic.

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YAMAHA SC500

Yamaha's latest thrill machine is yet another dimension of their superb two-stroke engine technology packed into a chassis unsuited to the machine's explosive performance.

**Motorcyclist Test
by Dave Holeman**

There just doesn't seem to be any end to the power race. Nobody seems to know exactly where it's heading, why it's happening the way it is and who it's pleasing. In the case of the shattering SC 500cc two-stroke single from Yamaha, even the racing and R & D Departments of the distributor can't tell us why the machine was made or what (or whom) it's for. Hence the SC, or scrambler designation to at least give the bantling a place in life.

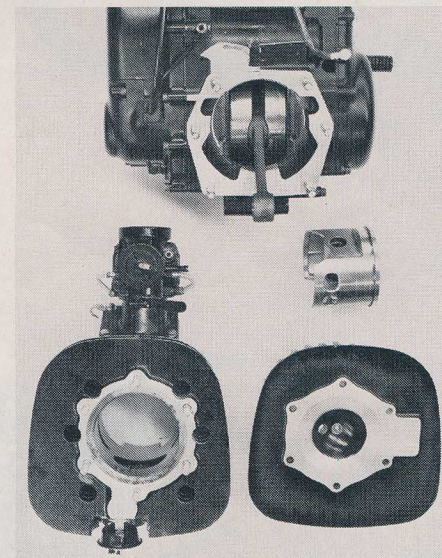
Striving for ever more power, Yamaha's biggest two-stroke-single engine is a magnificent piece of workmanship, no question about it. The stark, business-like appearance of the 30 cubic inch engine looks so very much like the smaller 360 that most people didn't realize it was the 500. Rightfully so, as the 500cc engine is nothing more than a massively overbored 360 engine. Having the same 70mm stroke, the bore is punched out 15mm to 95mm, making the biggest production two-stroke piston in the world. The only other varience from the 360 engine is the proportionately larger induction system. Carburetion is a 38mm Mikuni attached to a large six-petal reed valve manifold. To permit the average rider to kick start the engine, the cylinder is fitted with a compression release above the exhaust port. Cleverly located on the kick crank, a cam lever pulls on the case-mounted cable to open the compression release automatically when the kick arm is driven down.

Further intricacy comes from the use of Yamaha's novel Omni-Phase balancer system. In the case of both the 360 and 500 (both use the same crankcases), the single billet counter-balance flyweight is driven by chain from the right side of the crankshaft. Included to crowd the inside of the cases are two freewheeling guide sprockets and a chain tensioner. The massive helical gear-driven clutch uses 15 plates (8 friction and 7 driven plates) to resist wear and ensure non-slip performance. A break in tradition came with the use of an enormous four-speed gearbox rather than a five-cog unit to adequately hold onto the power without failing.

Our staffers had recently completed a road test of the big 501cc Maico scrambler and were ready for the worst when we tried starting the SC 500. That's just what we got. For the first two weeks of testing, we went through the agony of kicking the Yamaha and receiving its regular one-in-three backfires through the kick arm that feels sufficient enough to break the fragile metatarsal bones in the arch of the foot. A later discovery found the compression release cable to be out of adjustment, too loose, which caused most of the painful discomfort. Once properly adjusted, starting was no more difficult than required by the average 250cc single.

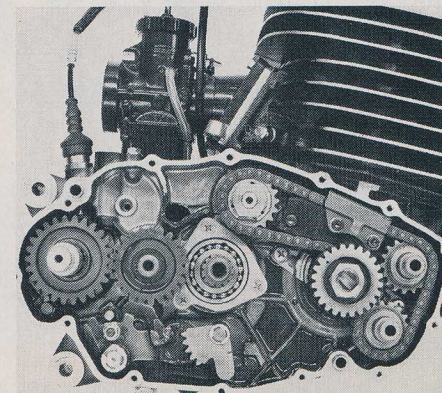
Breathing of the compression release into the exhaust port keeps the fuel goo off the outside extremities of the cylinder and eliminates the pst-pst-pst as the engine is started. The engine is sort of asleep from an idle up to approximately 4000 rpm where it begins to accelerate at a rapidly increasing rate. The usable power is in a smaller rev range, up to 6500 rpm, than we'd prefer and it is explosive enough to require the talent of a prudent and experienced rider to keep things under reasonable control. It's not the type of power safely suited to the neophyte rider or one who's just moving up from a 125cc enduro. It's earth shattering, trench digging, neck snapping, eye watering acceleration that will propel you from a dead stop to the first turn faster than the average rider's reflexes can function.

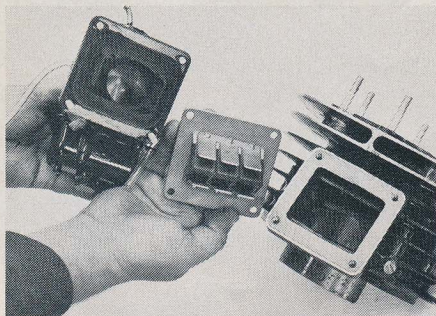
As a break from our norm, we twice took the SC 500 through a grueling ride over the 610-mile Baja 500 course while pre-running the event with some of the entrants. For five days total, from 8:00 in the morning until 8:00 in the evening, the Yamaha was ridden constantly. It consumed over 50 gallons of stale



Above: Gargantuan 3.74" bore circumvented by equally large ports. Crankcases and crank same as 360 with 70mm stroke.

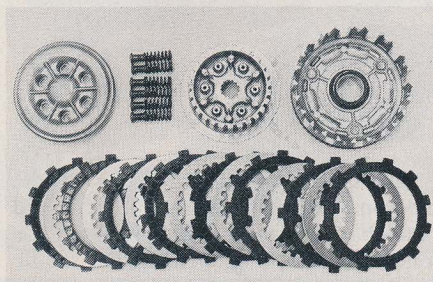
Below: Sprocket city on drive side with chain-driven Omni-Phase billet balancer.





Above: Mikuni with 38mm venturi dwarfed by massive intake opening. Six-petal reed valve manifold uses metal flaps.

Below: Monstrous 15-plate oil-bathed clutch bulletproof. Smooth to operate.



Photography by Eric Rickman, Dave Holeman

Baja gasoline, in excess of 10 quarts of assorted oils and tons of dust-filled Mexican air without complaint. Not one fouled spark plug, not one loose bolt, not one machine failure. Incredibly dependable. We left on the stock 16-tooth countershaft sprocket to stretch out the gas stops, and punished the clutch in the slow first gear stuff in the process (Yamaha recommends 13-tooth primary). Never once did it complain or overheat, drag or refuse to disengage. The gearbox is equally tough. Shifting is short and crisp although the short throw of the lever allows passing bushes to grab an undesired gear for the rider when they hit the arm. The ratios between gears are probably adequate for track racing, but the high first cog leaves less experienced riders with a lot of clutching to do in the rough stuff. Fuel consumption wasn't as great as we thought it would be and the SC 500 would average about 30 mpg on open roads and drop to around 23 mpg in the rough. The inability of any rider to hold the throttle open for anything more than short bursts must account for the relative economy.

Development of oil injection on production machines by Yamaha was the greatest boon to the two-stroke since the invention of the Snurle loop induction. But somehow Yamaha has made lubrication procedures for the SC 500 more inconvenient than with straight pre-mix. Though equipped with inspection slots, the left side cover must be removed to positively read the content of the plastic tank. Filling the tank requires removal of the right side cover to acquire access to the crossover filler tube. With the filler tube in sight, it must be slipped off its "C" clip, the cap retainer removed and the cap cork pulled out. Oil is then poured in at a very slow rate (to prevent overflowing the small orifice of the filler tube) until the tank is filled. A pain. But we're not done yet. Next, a recommended mixture of 30:1 must be poured in the 2.4-gallon gas tank to supplement the oil injection system. The filler spigot is too small and the phenolic cap screws on, using a simple cork gasket for sealing. The cork gasket falls in the dirt when the cap is lifted up and gas overflows all over the place because any normal





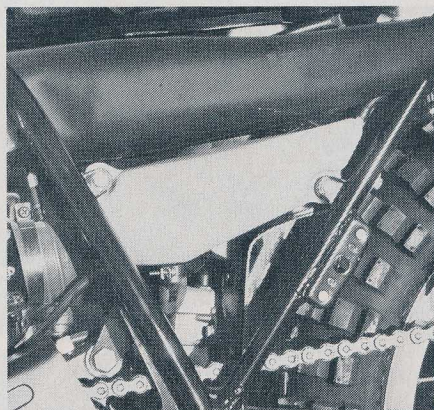
filler spout fills the spigot opening and makes watching the fuel level rise impossible.

The engine should either be straight pre-mix or oil injection, not both. It's messy, inconvenient and certainly not more efficient. With this particular machine, both the gas tank and oil tank should be larger to improve versatility. The forks on the SC 500 work well in both springing and damping. The ride is soft and clunkless. Those odd looking Thermal Flow rear shocks aren't just decorative. The object of the additional, finned reservoir is to contain more fluid while cooling it. It works. We compared the operating heat of the dampers on the Yamaha with an XL 250 enduro and found the Honda dampers were boiling hot to the touch and absent of damping while the SC 500 units were nothing more than warm and still in control of springing.

Area of biggest single disappointment is handling. Without question, the low-speed control and steering in soft terrain is as bad as any competition motorcycle we have ever ridden. Stability at all speeds is so erratic that the rider is on the edge of losing control much of the time. Each and every rider that took a spin on the SC 500 expressed dislike for the handling. In slow speed sand, the front wheel cuts and hunts, forcing the bars side to side and leaves the rider helpless to accurately control his desired direction. At high speed, the unpredictable steering lacks feedback from the front wheel when turned. We installed a 3.50x21" knobby up front (replacing the 3.00) and found a decided improvement in cushion, but little gain in steering control.

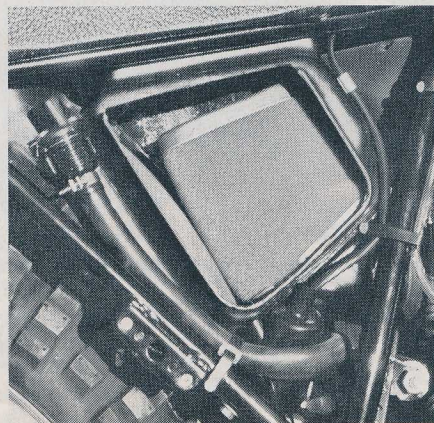
Suspected culprit of the bad handling performance is poor chassis geometry and improper weight distribution (fork angle is 30° and trail is a whopping 5.1 inches). More than on most moto-cros-

sers (averaging 28° to 30°), the rake angle is passable, but the enormous amount of trail (1 to 1½ inches above norm) causes insensitive slow-speed steering. Standard, the SC 500 has a 42/58% (front to rear) weight bias that further impairs front wheel traction during 90% of riding time.



Above: Petite oil container empties with gas tank. Oil injection with pre-mix causes inconvenience and tremendous smoking.

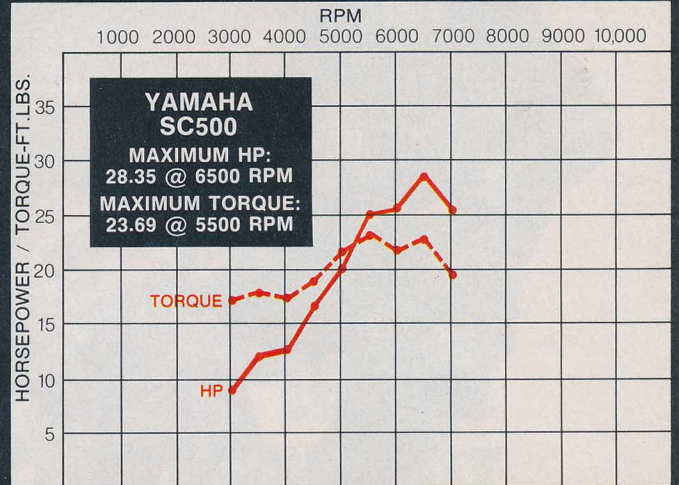
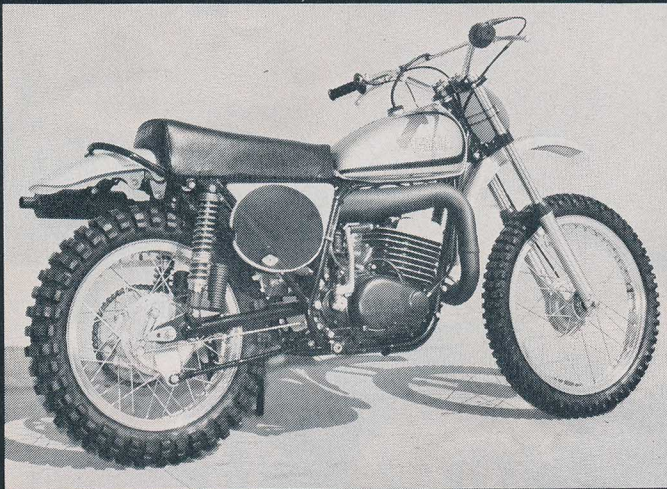
Below: Filler tube for oil tank on this side. Washable, foam air cleaner very efficient, but difficult to replace.



Summary impressions of the saddle and comfort items such as footpegs and handlebars are good. Here, Yamaha has done well. For long spells in the saddle the tiny hand grips are cramping. The Omni-Phase balancer does its job well also. A 450cc Kawasaki MX that was with us much of the time shook violently compared with the SC 500, although it's considerably quicker in acceleration. The huge 4.60x18" Dunlop rear knobby is slippery as a greased flag pole until it gets skuffed-in. The alloy rims are light, although we left a few noticable dings in them from the Baja rock gardens. The brakes are good, too good, and lock up with uncomfortable ease. Longer arms might alleviate this. The up-swept pipe is conveniently out of the way and the silencer keeps the irritable two-stroke pop to a plausible minimum. The spokes require attention often, as we tightened them a half dozen times. The washable foam air cleaner works superbly when cleaned and oiled. Unfortunately, it's a real clumsy and difficult task to remove and replace.

After 1300 miles in the saddle of the SC 500, we came to respect and admire the strong running, dependable engine. Equally strong is the smooth performing and virtually over-engineered driveline. Vibration of the big single is held down to a pleasant tremble and a high degree of comfort is appreciated by any rider. But after all the hours and miles in the saddle of Yamaha's biggest scrambler, we never could accustom ourselves to the uncontrollable handling antics and dual lubrication mess. Compared with the exorbitant 501cc Maico, the price is fair at \$1237 for the enthusiast who places brute power above all else. For the rest of us, we just can't find a place in the American competition scene that fits the abilities of the SC 500, and it's absolutely a shame to buy a motorcycle that isn't fun to ride. ●

YAMAHA SC500



TEST BIKE

Serial number.....363-002088
 Engine serial.....363-002088
 Date of manufacture.....N/A
 Base price as tested.....\$1237
 Factory warranty.....None

ENGINE

Type.....Reed Valve, Two stroke single
 Displacement.....496cc
 Bore x stroke.....95x70mm
 Claimed HP @ RPM.....44 @ 6,500
 Claimed torque @ RPM.....37.1 ft. lbs @ 6,000
 Compression ratio.....N/A
 Lubrication system.....Oil Injection W/30:1 Premix

Carburetion.....38mm Mikuni W/6 Petal Reed Valve
 Fuel required.....Regular
 Air filter.....Washable Foam
 Ignition system.....CDI Magneto
 Electrical system.....None
 Battery.....None
 Starting.....Primary Kick W/Decompressor
 Exhaust.....Expansion Chamber W/Muffler

DRIVE TRAIN

Primary/ratio...Helical Gear/2.66:1
 Clutch.....Wet, 15 Plates
 Transmission.....4-Speed
 Shift.....Left Side, Down for Low
 Gear ratios.....1st 2.0:1 2nd 1.35:1
 3rd 1.0:1 4th 0.807:1

Final drive, size.....Chain # 520 1/2 x 3/8"
 Sprockets, front/rear/ratio.....14/51/3.642:1

CHASSIS AND SUSPENSION

Frame.....Tubular, Double Cradle
 Forks.....Telescopic, Double Damping
 Caster/trail.....60°/5.1 in.
 Steering damper.....None
 Rear shocks.....Adjustable, Dual Springs Over Reservoir Dampers
 Brakes, front.....Internal Expanding
 rear.....Internal Expanding
 Tires, front.....3.00x21 Dunlop Sports
 rear.....4.60x18 Dunlop Sports
 Balance weights.....None
 Rim locks, front/rear.....2F/2R

WEIGHTS AND CAPACITIES

Weight, wet, unladen.....270 lbs.
 Weight bias, front/rear.....116/154 lbs.
 Fuel capacity.....2.4 Gal.
 Engine oil.....0.6 Qt.

STANDARD EQUIPMENT

Controls, left hand.....Clutch, Kill Button
 right hand.....Throttle, Front Brake
 Speedometer.....None
 Tachometer.....None
 Indicators.....None
 Locks.....None
 Tools.....5 Pcs.
 Stands.....Side

