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SPEEDWAY SILVER SHADOW

**For competition
only: a good and
proper racing mini**

SUPPOSE you were a progressive midwestern minicycle manufacturer. And suppose that you were going to produce the ultimate 125-cc mini; a machine available in both street and racing versions with a target price around \$400. Where would you begin?

What engine would you choose?

Well, in recent years the five-speed Sachs powerplant has become quite a celebrity. The thing is almost unbreakable and is still sufficiently light and flexible to power all sorts of motorcycles, from motocrossers to street bikes. In short, the Sachs is good because it has plenty of poop and stays together.

But horsepower alone won't make a competitive mount. All the torque in the world isn't worth a hill of beans unless it is harnessed properly. In keeping, the second basic ingredient for the ultimate minicycle is a top notch frame. Above all it must

be rigid, light and fully suspended at both ends. Add to this a comfortably padded saddle, sensitive brakes and a few other accouterments and you have a fast, functional sportin' machine . . . like the Speedway Silver Shadow.

It comes in two models, street and competition, which sell for about \$420 and \$400 respectively.

Our test describes the competition Shadow - no lights, muffler or horn. A business machine. And if its excellent performance doesn't make the competition wince, the ear-shattering racket from its chrome expansion chamber surely will.

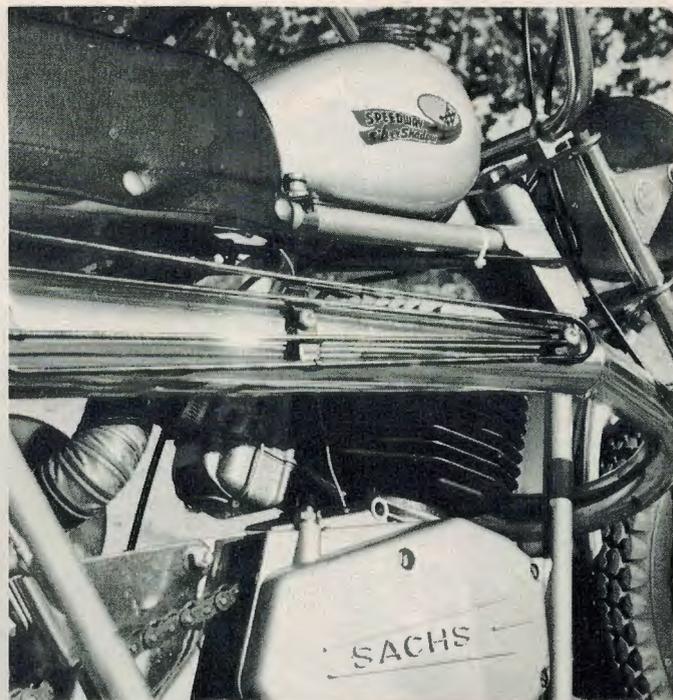
There is nothing chintzy about the Silver Shadow frame. It is of an excellent design, extremely rigid and made from quality materials. High yield steel is used throughout to provide structural stiffness and still be sufficiently resilient to shocks that it resists cacking. Clearly, Speedway Products could have chosen to use a less exotic metal, such as mild steel, and most riders wouldn't know the difference, much less care. ("Mild, schmild; it don't matter to me"). But in the long run it's things like this that make the difference between success and failure.

The frame is of a full double-cradle configuration. Often the double-cradle, or double-loop, design ends up weighing several pounds more than the single-loop type because of struts and braces required and just more material involved in building it. Its big advantage is, however, in lateral rigidity. Torsional (twisting) loads that occur as you dive into a turn or descend off a jump, for instance, try to stretch the bike every which way. As an example, imagine the front fork and wheel to be a two 2½-foot long lever with maybe 270 lb. of mini-cycle and rider at the end of it. With the bike at rest static loads alone at the steering head amount to almost 600 ft/lb. And when you hit a bump at, say, just 20 mph the stress concentrated in that area amounts to about 1400 ft/lb. and as speed increases, these stresses really soar. Under these circumstances the materials used and quality of welding becomes quite critical indeed.

Speaking of welding, another Speedway plus comes to light. Because instead of using the more conventional oxygen-acetylene welding method, the Silver Shadow's frame is assembled with argon shielded arc welds. The main benefits of this approach are a cleaner, more consistent bond between metals and much greater heat penetration. Here, an extremely strong electrical current is used to reduce the metal to a molten state while a jet of inert argon gas blows directly on the area to be welded. As a result, air is not allowed to prematurely contact the critical area, for this would cause unwanted oxidation of the softened steel and make it brittle. Also, it is desirable to maximize heat penetration of the metals in order to increase the depth of the welded bond. Sure, it's a more expensive and complicated process than most of the industry uses, but the results are superior to much of that currently on the market. Make no mistake about it. Quality counts.

Good engineering is also found in the Shadow's swing arm design. Here the rear wheel mounts in sturdy tabs welded to the swing arm ends. On the whole this approach is substantially stronger than the alternative method of merely flattening the ends of the arm, then drilling them to accommodate the axle.

Another plus is the method of chain adjustment. Rather than loosening the rear axle, jockeying the rear wheel about and then making sure the wheel is aligned correctly before tightening things up, the Shadow has eccentric tabs. These tabs are found at the swing arm pivot. So all you have to do is loosen the arm's through-bolt, adjust the tabs accordingly and secure the bolt. Quick and neat.



To top it off, the frame is finished in a deep, glossy silver enamel, which is quite logical considering the name of the bike. The paint application is quite neat, free of runs, pits or other flaws.

The seating arrangement is excellent and rider comfort rates a Gold Star for forethought. The saddle is a sumptuous, three-inch thick affair upswep at the rear. And its shape and placement are such that a rider of average height will find his weight positioned for optimum handling in the rough. Actually, among most cycles a decent seating position is not so common as you'd expect. Too often the seat location is a result of styling considerations, the practical functions of weight distribution being largely ignored. So, naturally, handling suffers. Fortunately, though, such short-sightedness is on the way out.

In addition, the footpegs and 27-inch wide handlebars are so placed that five-footers don't have to stretch and six-footers needn't scrunch up. However, taller riders may find some interference between handlebar ends and knees when the bike is well banked over and the leg extended into the turn as, for instance, in a hairpin curve. Due to the considerable hassle involved in shortening one's legs, however, we suggest altering the handlebars instead.

Incidentally, the footpegs are hinged and will fold back 45 degrees rather than digging into the track when the machine is leaned well enough over. This trait is also becoming more standardized throughout the industry which is a welcome trend. The only improvement left to make in this department now is to make the pegs spring-loaded so they will snap back into position after being forced up.

At the fore end of our test machine we were pleased to see that spiffy Speedway hydraulic front fork. The company has been something of a pioneer in this area, producing a unit with 2½-inches travel. Regrettably many mini-cycle manufacturers show little or no interest in this field at all, rejecting a decent front suspension as too expensive. Yet others are genuinely interested in them but for one reason or another still can't produce one. Either way it's a sad situation.

The Shadow's forks are not without fault, however, and have one particularly irritating bugaboo: plastic fork filler caps. These small, red items are threaded to fit the tops of the fork



legs. And extreme care must be taken in removing and replacing them when checking fork oil. Their threads will strip quite easily. A simple solution is to buy a pair of conventional bolts with the same thread size from a hardware store. At worst, you might have to shorten the bolts to the correct length - no sweat there. Together with a couple of gaskets, the total investment will still be less than a dollar.

Closer inspection of the forks revealed yet another shortcoming: there is no provision for draining fork oil. As a rule, hydraulic forks have drain screws located at the lowermost ends of the fork legs. In this way a rider can change the different viscosities of oils used in the forks to suit different riding conditions. Also, having drain screws makes it that much easier to administer the exact amount of fluid required. If you miscalculate or absentmindedly pour in the wrong amount of oil you can quickly drain it all out and start all over again. As things are now, the only way you're going to get that oil out is by turning the bike upside-down. Somehow, this sort of therapy seems incongruous. It's like shaking a mountain lion by his tail to get the ticks out of his ears.

Suspension rates are on the stiffish side; not quite denture rattling but certainly firm enough to keep rider and mini-cycle going in the same direction as they bound across rough surfaces rather than wallow uncontrollably. Neither front nor rear suspension bottomed out in the course of some fairly rapid fire-roading, but on bumpier ungraded surfaces it is possible to squeeze an unnerving *whu-hunnk* out of the front end as metal hits metal at the end of fork travel. And this with a 150-lb. rider, which can hardly be termed too heavy. Indeed, by virtue of the fact that it is a mini-cycle, most of this bike's pilots will be youngsters and not fully grown adults. But still, any mini costing in the neighborhood of \$400 or more should certainly be capable of at least a 150-lb. burden.

In all fairness, though, we must emphasize that the Silver Shadow is not a trail machine as such. Rather, it is a track racer and the smoother the track the better it races. So if

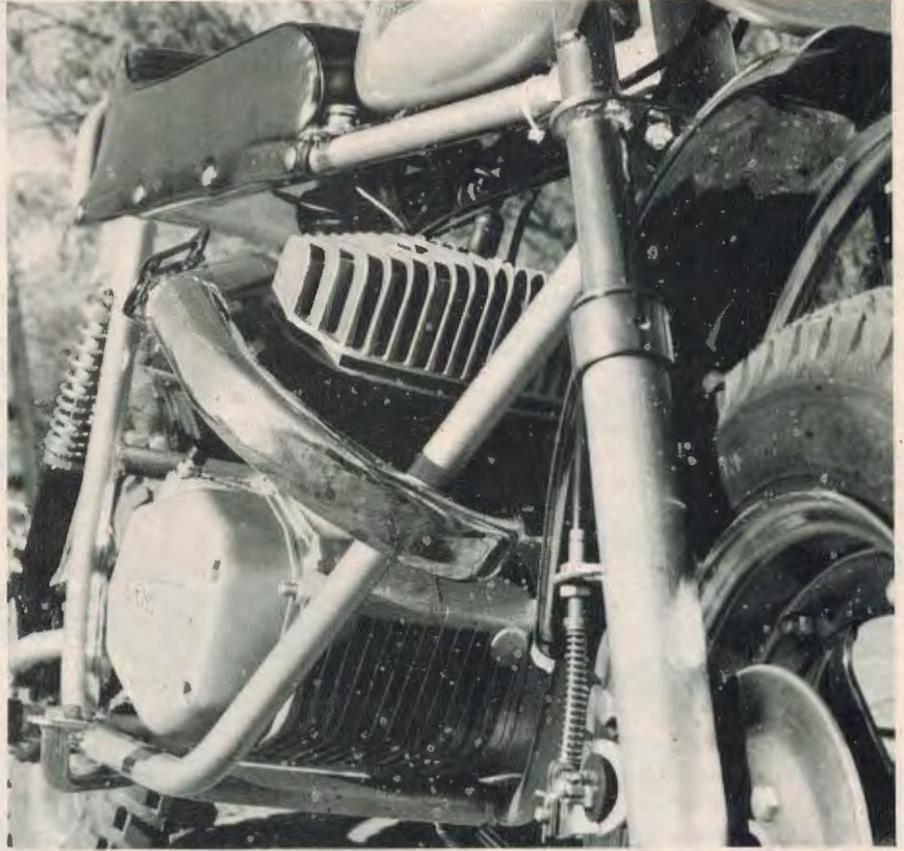
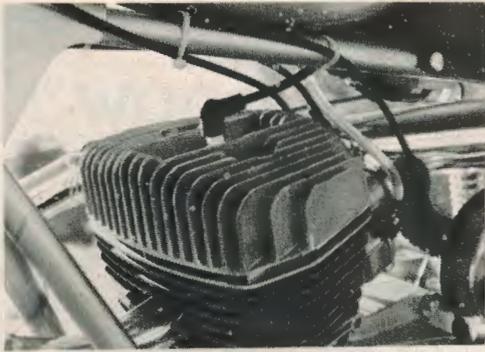
you're eyeing this bike for use as a pleasant poking around type vehicle with even occasional utilitarian applications, forget it. The Silver Shadow hasn't enough patience for that. It would be like taking a gladiator to a cocktail party.

In keeping with its high performance demeanor, our test bike's brakes could not be faulted. Up front, a cable-operated disc stopper, produced by H&H Products of Milwaukee, Wisconsin, does a safe, sure job of scrubbing off speed. We halfway expected it to be somewhat grabby and requiring more than average lever effort. But to its credit, our fears proved unjustified on both counts. In fact, its operation is superior to that of many drum brakes currently available. Quite often, braking systems designed with sheer stopping power in mind work well enough in experienced hands but require much more delicacy to operate them than the average rider can provide. It seems the more powerful they are the more touchy they are too. Under these circumstances a strong yet progressive binder as fitted to the Shadow's front hoop is more than a welcome accessory.

The rear brake is also strong and easy to use. This is a more conventional internal-expanding type but is actuated by a rod rather than a cable from the right foot pedal. Pedal travel, by the way, is long enough that you have excellent pressure control between the extremes of all-off and all-on braking. The geometry of the linkage is such that even the novice cyclist is afforded fairly precise stopping control.

Even though the mini-cycle stops as well as it goes, however, there is one modification that can be made quite easily that should make its good braking even better. Mind you, we're not nitpicking for the heck of it. Rather, the purpose here is to point out a method of improvement so simple that even the factory may have overlooked it.

With just a minimum of effort and time, maybe an hour or two, the rear brake can be converted to a floating backing plate unit. The advantage of this type over a fixed backing plate is not in greater braking strength but in finer braking



control. The fixed plate system has the backing plate anchored to the swing arm whereas the floating approach has the plate anchored to the main frame of the bike. Now, with the plate fixed to the swing arm, imagine the rear brake being partially applied as you descend a slope, for example. Inside the brake, shoes are being pressed against the drum, and up 'til now all is fine. But part way down the hill you hit a bump, not a big one, just a bump. What happens inside? Well, as the swing arm arcs up over the bump, the backing plate, which is fixed to the swing arm's radius naturally moves with it. But what doesn't move is the brake actuating cable or rod. It stays in the same position; and the brake shoes *inside* move. Your brakes are being applied and released by the moving swing arm. In this way the wheel will lock, then rotate, as long as you press on that pedal over bumpy surfaces.

On the other hand, the full floating system allows the backing plate to rotate independently of the swing arm because it is anchored to the frame, which in this case is *relatively* stationary. Consequently, no significant braking occurs independent of rider control.

The fixed backing plate Silver Shadow lends itself well to a conversion to a floating backing plate. Basically, all you'd have to do is remove the brake anchor tab from the swing arm and relocate it on the main frame; in this case, on the left rear down tube, aft of the footpeg and up an inch or two. Okay. So there's your new mounting point. All that is necessary now is to fabricate a connecting link between the backing plate and new mount. This can be done with a one-inch wide strip of aluminum stock about 1/8 or 3/32 in. thick, cut to length, bent a tad to fit and drilled at each end for bolts.

Simple, huh? And cheap too. Even if you paid somebody else to do the work the total investment would probably be around \$15 - \$20; maybe less if you brought your pretty sister along to charm with innocent questions.

The Silver Shadow's handling is excellent. It steers well and controllability in power-on slides is first rate. Steering with the

throttle is a breeze. The powerful Sachs engine always seemed to have enough beans on tap whatever the circumstances. And with five ratios in the transmission to play with, you're never too far off the power curve. However, engine response is decidedly pipey. That beautiful chromed expansion chamber has been designed to tune in between 5100 and 8200 rpm. And as you accelerate into the power range you are pulled backward in the saddle with a delightful rush of horsepower.

The engine is rated at 12.5 DIN bhp at 7300 rpm (muffled). But the German DIN horsepower rating is conservative by American standards where the SAE rating system is used. Actually the Sachs churns out in the neighborhood of 15 American horsepower, which is certainly enough to make the imprudent rider sorry he opened the throttle so abruptly.

The Sachs engine epitomizes high speed-reliability among 125-cc two-strokes. Conventional piston port induction and exhaust dispatch breathing chores with a great degree of efficiency. Ball main bearings support the crankshaft while caged roller bearings are found at the big end of the steel connecting rod. At the rod's small end caged needle bearings are fitted to accommodate the wrist pin.

Helically-cut primary gears transmit engine torque to the transmission, where the mainshaft is held in roller bearings while the countershaft rotates in ball bearings. The oil bath clutch is a particularly stout item, featuring five friction plates and a total of nine pressure springs.

A 24-mm Bing carburetor does all the necessary fuel/air mixing. Throttle response was excellent with this unit. No starvation, flooding or problems with acceleration flat spots occurred. It is actually a concentric-type carburetor, which means that the main jet is so situated in the float bowl that it is always surrounded by fuel. In fact, the only way gasoline starvation could possibly happen is by running out of fuel. Because it's not going to happen through leaning the bike over or busting through comparatively high-G turns.

But despite of its more than adequate power the Silver

Shadow was seemingly no more wheelie happy than a motorcycle with one foot more wheelbase. Relatively short wheelbased machines (40 inches for our test bike) generally love to loop, and their strong rearward weight bias doesn't help matters. In any event, Speedway has arrived at a delightfully manageable chassis layout.

However, the poor quality of certain cables on the bike detracted much from its glamour. After a brief few hours riding, the clutch lever was all but impossible to pull in due to stiffness and binding. Fortunately, the transmission didn't mind a whit being shifted without benefit of clutch once underway, but pulling in the clutch otherwise was a two-handed proposition.

We discussed this situation with the manufacturers in Ohio. They were aware of the problem and have been busy straightening things out. As a result, future models will have slightly different cables operating within Teflon-lined sheaths. This should eliminate the problem handily.

The lack of an on-off fuel tap on our test bike struck us as unusual. Rarely are these things omitted from any cycle; mini or motor. Not a frill, a gas tap prevents fuel from seeping past the carburetor float needle and puddling in the crankcase when the machine is at rest. Along with wasting gasoline this also leads to wetted spark plugs and hard starting.

And driving this point home is an incident that took place on one of our test sessions. We had loaded the Shadow and several other minis into our van and took off for the local drag strip to make 1/8-mile acceleration runs. A couple of days earlier, the mini had been gassed up and made ready. But come test day the machine just refused to run. It would start in a couple of kicks but would only run for 10 or 20 seconds at a time. Then the plug would foul and the engine expired. This happened about five times while we experimented madly with different spark plugs to effect a cure. No such luck. Regardless of heat range, we came up with a wet plug every time. Our diagnosis: a great puddle of raw fuel in the crankcase. It appears that while the bike sat in the garage for a few days, fuel was seeping from the tank, past the carburetor float valve and into the crankcase. Consequently, when the engine was started with a fresh plug, it would run only a short while on this super-rich mixture, then the plug would get soggy and hot-tempered Sachs would wheeze, gurgle and die. Pity. And so ended the great Silver Shadow Drag Strip Caper.

Our final criticism concerns the ignition kill button. It's value as a safety feature is almost completely negated by its location. This item should be placed on the handlebar where it can be reached without compromising control of the machine; usually within thumb's reach near the twistgrip. The Shadow's kill switch is mounted between the fuel tank and saddle on the frame rail. This won't do. For not only must you take your hand from the bars to reach it, but you also have to take your eyes from the track ahead of you to find it. Fortunately this problem can be easily remedied with a bit of insulated wire, household tools and about a half-hour of your spare time.

In the final analysis, we were quite pleased with the Speedway Silver Shadow. Particularly impressive is its excellent blend of speed and stability; safe and secure with no trace of squirrelness. And who can fault the Sachs powerplant for performance and reliability?

Granted, the bike has its faults (as does every other machine made), but they are relatively minor. Cables can be replaced, metal capscrews substituted for plastic ones and the lower fork tubes drilled and tapped for draining. So don't despair. Also it's a good bet that at least some of these shortcomings will be eliminated in future models.

We'll wait and see. □

SPEEDWAY SILVER SHADOW



ENGINE

Engine, type	Two-stroke single
Bore	2.126 (54mm)
Stroke	2.126 (54mm)
Displacement	7.5 cu. in. (125cc)
Horsepower @ RPM	12.5 @ 7300
Compression Ratio	9:1
Carburetion	Bing, 24mm
Ignition	Flywheel magneto
Lubrication	Oil mist
Fuel capacity	1.0 gal.
Fuel required	Premium

TRANSMISSION

Gear ratios, overall	
1st.	22.03:1
2nd.	13.10:1
3rd.	9.36:1
4th.	7.20:1
5th.	5.95:1
Primary drive	Helical gears
Clutch, type	Wet, multi-disc
Final drive	Chain, 1/2 x 5/16

CHASSIS

Frame, Type	Double cradle
Wheelbase	40 in.
Suspension, front	Telescopic fork
Rear	Swing arm
Tire size, front	3.50-10
Rear	3.50-10
Ground clearance	6 in.
Seat Height	25 in.
Curb Weight	149 lb.

PERFORMANCE

Max. speed in gears	
1st.	19.26
2nd.	31.98
3rd.	44.04
4th.	58.20
5th.	77.40
Top speed (calculated @ 8200 RPM)	77.40
SS 1/8 mile, speed	*N.A.
Elapsed time	*N.A.

PRICE AS TESTED \$399.95