

# VOLKSWAGEN SCIROCCO 16-VALVE



*A VW for the perpetually impatient*

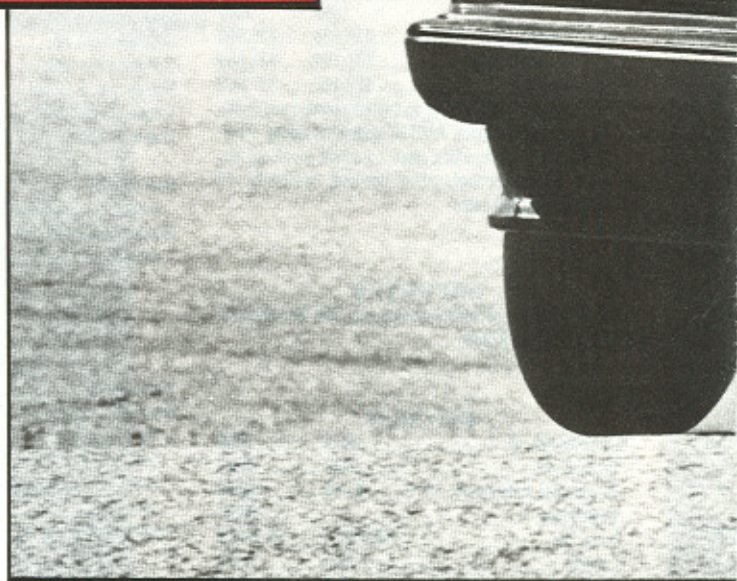


COME TO THINK of it, we never met a multi-valve engine we didn't like. In every case so far, additional valves have increased engine power without sacrifice. We are, of course, not the only people to have noticed this, and the result is automakers around the world are now scrambling to add valves atop their various engines.

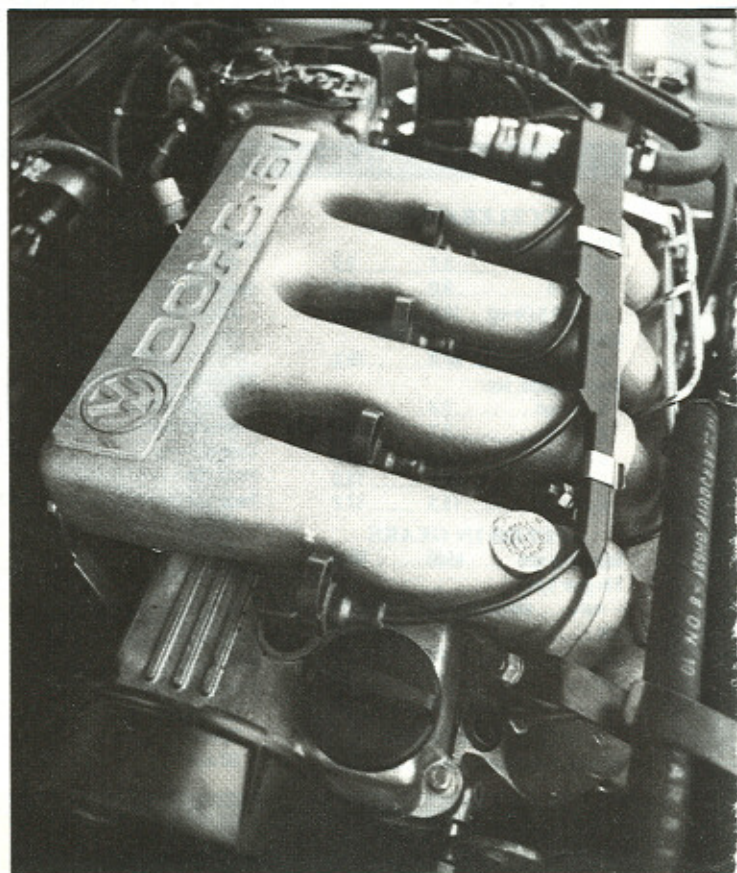
Volkswagen is the latest name added to the list of automakers offering multi-valve engines, with the 16-valve Scirocco just introduced to the U.S. Next year this same 16-valve engine will find its way into the GTI as well, we are told.

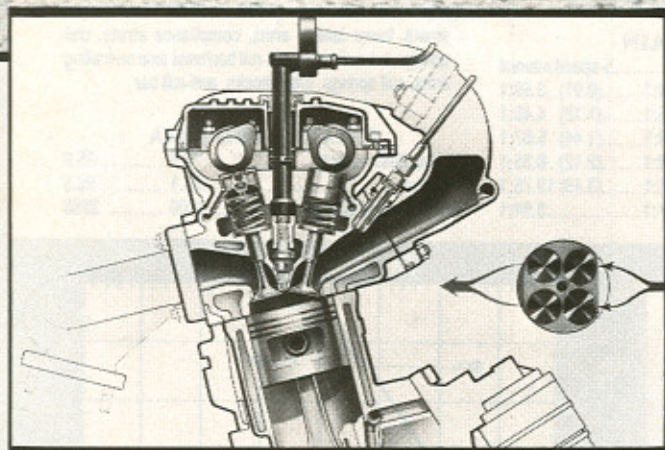
The Scirocco in which this engine fits differs little from the other Sciroccos that have been around since the car was restyled in 1982. It is still a tidy 2+2 sports coupe with a rounded, aerodynamic-looking shape that's maybe a little too easy on the eye because it has gone mostly unnoticed for the past couple years.

To make it more eye-catching, the 16-valve has been put through the kind of automotive beauty-parlor treatment that all sporting cars now undergo. It came out of this procedure with body-color bumpers, air dam, skirts and cast-alloy wheels with sculptured holes that look as though they force cooling air to or



AT A GLANCE	Volkswagen Scirocco 16V	Isuzu Impulse Turbo	Toyota Celica GT-S
Price, base/as tested	\$11,980 \$13,565	\$14,439 \$14,860	\$12,948 \$15,730
Curb weight, lb	2365	2880	2720
Engine/drive	inline-4/fwd	inline-4/rwd	inline-4/fwd
Transmission	5-sp M	5-sp M	5-sp M
0-60 mph, sec	7.7	8.5	8.6
Standing ¼ mi, sec @ mph	16.1 @ 86.0	16.4 @ 85.5	16.5 @ 85.0
Stopping distance from 60 mph, ft	150	154	149
Lateral acceleration, g	0.80	0.75	0.81
Slalom speed, mph	62.6	60.7	59.6
Fuel economy, mpg	25.0	26.0	21.5
	<b>Pro</b>	<b>Con</b>	
Scirocco 16V:	powerful, smooth revving engine; good handling grip; competitive price	dated chassis, bland looks, vague shifter, very small rear seats	
Impulse Turbo: tested 9-85	55% more powerful than non-turbo, slick Giugiaro styling, rwd for traditionalists	engine rough at high rpm, comparatively primitive suspension, complicated controls	
Celica GT-S: tested 1-86	much improved engine response and high-rpm smoothness, crisp handling	Toyota's 2.0-liter engine still less smooth than its 1.6, a lot of body roll, small rear seats	





*Arrangement of the valves in Volkswagen's 16-valve Scirocco engine precludes valve contact with the piston. Hydraulic valve lash adjusters reduce maintenance. The valves' included angle is 25 degrees.*

from the brakes, depending on which side of the car they are on. There's also a new radio antenna at the back of the roof, sloping aft like an aircraft antenna. Colors are limited to red, black and silver.

Inside, the Scirocco is more Volkswagen than sports car, but the pieces are there, all close to the right places. The white-on-black instruments are readable and attractive; the controls are simple and accessible; all this, and the car is pleasantly devoid of electronic and artistic experiments. It's a tight fit for the front-seat passengers, especially if the Scirocco has a sunroof, and the rear seat is strictly kid-class, but the trunk is bigger than expected. Perhaps the Scirocco is a little too Spartan inside, though it is well assembled.

If the Scirocco has become a little antiquated in styling and trim, it has managed to remain competitive in its chassis and performance. In design, the VW's suspension is typical modern small car: MacPherson struts in front with a twist-beam rear axle, all on coil springs with anti-roll bars on both ends. For the 16-valve, the springs are shorter and thus stiffer; the rear anti-roll bar is larger and shock damping is increased. There's also a cross-brace between the front suspension arms to increase lateral rigidity. Tire size is increased to 185/60HR-14 on 6-in. wheels.

Besides tightening compliance of the suspension, the increased rear-roll stiffness changes the balance of the car. Now it's possible to hang the tail out at maximum cornering speed when the power is cut, something front-drive cars have been reluctant to do. "This is an entertaining street package," commented one driver. At the track the latest Scirocco turned in an excellent 62.6 mph in the slalom, a significant improvement on the 59.7 mph of the lesser Scirocco. Its skidpad value was just a tad improved, from 0.79 to 0.80g. Fortunately the ride has suffered little. The car still absorbs big bumps and dips without trauma, though harshness on small irregularities is only average.

Braking performance has been improved by fitting 9.4-in. solid rear discs in place of the standard car's drums, and enlargement to 10.1-in. of its vented front discs. Stopping distances, especially from 80 mph, are admirably short and well controlled.

There is reason for the upgraded brakes. This Scirocco is *quick*. How quick? Quicker than a Porsche 944 or Mazda RX-7. It accelerates to 60 mph in a mere 7.7 seconds, fully 3.0-sec quicker than the last Scirocco we tested. It does the quarter mile in 16.1 sec, has ➡



PHOTO BY RICH CHENET

a top speed of 125 and still gets 25.0 mpg in normal driving. Even among the current crop of standout performers, this is stunning performance. It does this without excessive noise, with no turbo lag and with only 1.8 liters.

Beneath the new twincam cylinder head, the Scirocco uses Volkswagen's standard inline-4 modified with greater oil pump capacity and special piston-cooling oil jets. It gets new pistons to create a 10.0:1 compression ratio and from this develops 123 bhp at 5800 rpm and 120 lb-ft of torque at 4250 rpm. To achieve such high peak power, the engine has large enough ports that its low-rpm airflow is nothing to write home about. To compensate, the long intake runners are tuned to provide a ram effect, though there's still just the tiniest flat spot in acceleration off idle. The fuel

injection is Bosch KE-Jetronic, and the digital ignition operates with a knock sensor designed to provide maximum ignition advance when used with fuel of 96 Research Octane Number (around 92 pump octane). It runs fine on lower-quality gasoline, we found, but not with the same vigor as tested on premium.

Obviously this is no ordinary engine. Arriving, as it does, after about a dozen other multi-valvers, the Scirocco's configuration is not exactly mainstream. An engine cutaway shows how the exhaust valve operates directly above the piston, while the intake valve is canted 25 degrees. This arrangement, according to Volkswagen, eliminates any chance of the valves touching each other or the piston, just in case a cam belt breaks or a driver shifts from 5th to 2nd gear by mistake.

This same arrangement of valve angles is used in VW's forthcoming V-6 engine, with a very narrow 15-degree vee that uses one cylinder head for both cylinder banks. In this arrangement, the combustion chamber seen in the Scirocco 16-valve can be used on the V-6 with only two camshafts operating four valves per cylinder, through a clever crossover arrangement.

Never mind. That engine is a year away in the next-generation Scirocco. For now, the Scirocco has become the kind of car we always hoped it would be: lively, entertaining to drive and genuinely quick.

### PRICE

	Scirocco 16V	Scirocco 1983
List price, all POE	\$11,980	\$10,800
Price as tested	\$13,565	\$11,360
Price as tested includes air cond (\$750); elect. window lifts, elect. adj mirrors, central locking (\$445); AM/FM stereo/cassette (\$390); warranty: 24 months/unlimited mileage		

### GENERAL

Curb weight, lb	2365	2170
Test weight	2530	2335
Weight dist (with driver), f/r, %	62/38	63/37
Wheelbase, in.	94.5	94.5
Track, f/r	54.7/53.5	
Length	165.7	167.8
Width	64.8	63.4
Height		51.4
Trunk space, cu ft	12.2	6.0
Fuel capacity, U.S. gal.	13.8	10.6

### ENGINE

Type	dohc 4-valve inline-4	sohc inline-4
Bore x stroke, mm		81.0 x 86.4
Displacement, cc		1781
Compression ratio	10.0:1	8.5:1
Bhp @ rpm, SAE net	123 @ 5800	90 @ 5500
Torque @ rpm, lb-ft	120 @ 4250	105 @ 3250
Fuel injection	Bosch KE-Jetronic	Bosch K-Jetronic
Fuel requirement	unleaded, 87-pump oct	

\*Single entries indicate identical specifications.

### DRIVETRAIN

Transmission	5-speed manual
Gear ratios: 5th	(0.91) 3.34:1 (0.91) 3.59:1
4th	(1.13) 4.15:1 (1.13) 4.45:1
3rd	(1.44) 5.28:1 (1.44) 5.67:1
2nd	(2.12) 7.78:1 (2.12) 8.35:1
1st	(3.45) 12.66:1 (3.49) 13.75:1
Final drive ratio	3.67:1 3.94:1

### CHASSIS & BODY

Layout	transverse front engine/front drive
Body/frame	unit steel
Brake system, f/r: (1986) 10.1-in. vented discs/9.4-in. discs, vacuum assist; (1983) 9.4-in. vented discs/7.1 x 1.2-in. drums, vacuum assist	
Wheels	alloy, 14 x 6J alloy, 13 x 5J
Tires	Michelin MX V, 185/60HR-14 Michelin MX L, 175/70R-13
Steering type	rack & pinion
Turns, lock-to-lock	3.3 3.9
Suspension, front/rear: (1986 & 1983) MacPherson struts, lower lateral arms, compliance struts, coil springs, tube shocks, anti-roll bar/twist axle on trailing arms, coil springs, tube shocks, anti-roll bar	

### CALCULATED DATA

Lb/bhp (test weight)	20.6	25.9
Bhp/liter	69.1	50.5
Engine revs @ 60 mph in 5th	3100	3250

## ROAD TEST RESULTS

### ACCELERATION

	Scirocco 16V	Scirocco 1983
Time to distance, sec:		
0-100 ft	3.3	3.5
0-500 ft	8.7	9.5
0-1320 ft (1/4 mi)	16.1	17.8
Speed at end of 1/4 mi, mph		
	86.0	76.0
Time to speed, sec:		
0-30 mph	2.6	3.0
0-50 mph	5.8	7.4
0-60 mph	7.7	10.7
0-70 mph	10.6	14.5
0-80 mph	13.7	20.2

### SPEEDS IN GEARS

Maximum rpm	6900	6250
5th gear (rpm)		
mph	est (6300) 125	(5950) 109
4th	111	92
3rd	87	74
2nd	60	51
1st	37	31

### FUEL ECONOMY

Normal driving, mpg	25.0	27.0 <sup>2</sup>
<sup>2</sup> Trip fuel economy		

### BRAKES

Minimum stopping distances, ft:	
From 60 mph	150 158
From 80 mph	257 271
Control in stop	very good
Pedal effort for 0.5g stop, lb	25
Fade: percent increase in pedal effort to maintain 0.5g deceleration in 6 stops from 60 mph	40
Overall rating	very good good

### HANDLING

Lateral acceleration,	
100-ft radius, g	0.80 0.79
Speed thru 700-ft slalom, mph	
	62.6 59.7

### INTERIOR NOISE

Idle in neutral, dBA	58	51
Maximum, 1st gear	78	78
Constant 70 mph	76	74

## ACCELERATION

