PONTIAC FIERO

STYLING ANALYSIS

UNLIKE THE CORVETTE, which had a 30-year tradition to live up to when it was redesigned for 1984, the Pontiac Fiero is an all-new car with a personality to establish. Actually, its personality—that of a simple, efficient, slightly aggressive but very friendly and accommodating machine—was set early in the design process. Using the prevailing GM philosophy of clean, carefully controlled surfaces, Ron Hill's GM Advanced Studio spent just less than one year—December 1978 to October 1979—coming up with a tight, disarmingly simple form that expressed Hulki Aldikacti's mid-engine concept in no uncertain terms.

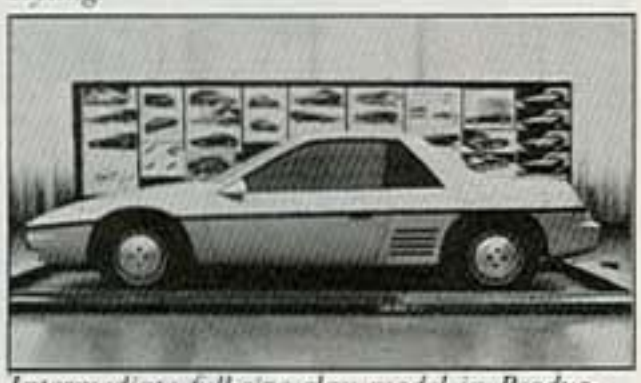
The concept of separate plastic panels bolted to the space frame structure was the basis for the surface treatment—using body contour lines for the panel joins. This treatment is similar to that employed on the Corvette, with the strong horizontal break line (actually a rising line from nose to tail) used as the meeting point for all the upper and lower surfaces.

A full-size clay model, covered in red Di-noc film to simulate a painted surface, was completed on May 7 and established the direction for all future development. With only detail changes to such items as headlight doors, wheel openings, rear quarter panels and taillights, this form was refined until it was ready to be released to the Production Studio on April 24, 1980. The form developed by the Advanced Studio had already been built in fiberglass and attached to a running chassis in March.

Although the proportions of the car were unlike those of the Corvette, the nose was too similar in character and the design lacked a clear Pontiac identity. When the project was turned over to John Schinella's team in Production, several basic changes were made: The windshield was moved forward, the nose shortened and twin black "bumper" pads added to the front and rear facias.

In the center of the car, attention was given to the quarter-panel detailing just behind the door glass. The Advanced design had this part of the space frame covered with black louvered panels; the Production Studio decided to give this area the appearance of window glass, an esthetic solution but perhaps the one part of the design that was not completely honest in its expression of the structure underneath. Various engine intakes were tried in the lower quarter panels, but these disappeared as the design approached its final configuration. (A much smaller intake reappeared on the left flank as the car neared production.)

First running P-car had Advanced Studio styling.



Intermediate full-size clay model in Production Studio.

In much the same way that the exterior lost its long-nosed sharpness along the path to production, the P-car interior went from a very mechanical, squared-off concept (similar to that used on recent Trans Ams) to a friendlier environment with softer radii on all components. But the modular concept first sketched by Marvin Fisher in 1979 was retained on the final interior design,

TECHNICAL ANALYSIS

with an interesting new iron head casting. A swirl-port intake that brings the fuel-air charge into the cylinder along a spiral path makes its debut in the Fiero. New combustion chamber and piston dome shapes keep the charge swirling (and mixing) until ignition. This has allowed the compression ratio to be increased from 8.2 to 9.0:1, which is surprisingly good these days for an engine without a knock sensor.

Otherwise there are very few modifications to the driveline and subframe assembly. The transverse transmission is available as either a 3-speed automatic with lockup converter and 3.18 final drive, or a 4-speed manual with top gear ratio options. Only the "performance" ratio with a 4.10 final drive is of interest to the enthusiast, as the 3.32 gear coupled with a 0.73 4th gear is suitable only for economy runs. The X-car axles are used as-is, including the constant-velocity outer U-joints.

The engine subframe, however, is not a straight interchange with the X-car. At the rear, the rails had to be kicked up to provide a better rear ramp angle. (In the front-drive X-car these rails connect to the floor pan at the firewall.) And the front rails have had the mount bushings rotated from a horizontal plane to a vertical plane. This allows the subframe to pivot downward about the front mount bolts for easier engine removal. To absorb engine torque reactions, an upper strut connects the cylinder head with a sheet metal bracket on the right rear shock tower. All of these subframe and strut mounts are well insulated with rubber bushings, which are great for isolating road and engine vibrations from the passengers, but don't do a lot for handling.

The front suspension is taken almost *in toto* from the Pontiac T-1000. Although not originally designed for a sports car, this particular short- and long-arm configuration is not too bad for this application. The major modifications were to widen the interconnecting subframe to give a 2-in. wider track and to relocate the shock absorber mounts. On the T-car, the shock mounts to the upper arm and stands very high in the wheel well. But to lower the Fiero's hoodline, the shock now mounts to an otherwise standard lower arm. Basically, this is a good design, especially with the contemporary practice of leading steer arms. But somewhere in the translation a little too much bump steer seems to have been allowed, causing more steering wheel feedback than we are used to.

Part of the feedback can be attributed to non-assisted steering—which I prefer. Early in the design it was decided that the low front weight made assisted steering unnecessary in most circumstances. The worst situation is parallel parking with the optional wide tires. In this case the effort is noticeable though not unreasonable.

At the rear, the suspension is essentially indistinguishable from the X-car's front layout. Even the trailing steer arms are there, although in the Fiero they are anchored to the subframe via tie rods that can still be adjusted for toe-in. The combination of leading front steer arms and trailing rear non-steer arms should give excellent cornering compliance understeer properties. Only a couple of really finicky evaluators have perceived a slight yaw overshoot, which could be because of lateral bushing compliance in the engine/suspension subframe. Otherwise, the handling properties are excellent, with an easily correctable drop-throttle oversteer when cornering at the limit. The reported roll angle of 3.5 degrees per g is reasonable, considering the front anti-roll bar is only 23.0 mm and there is none at the rear.