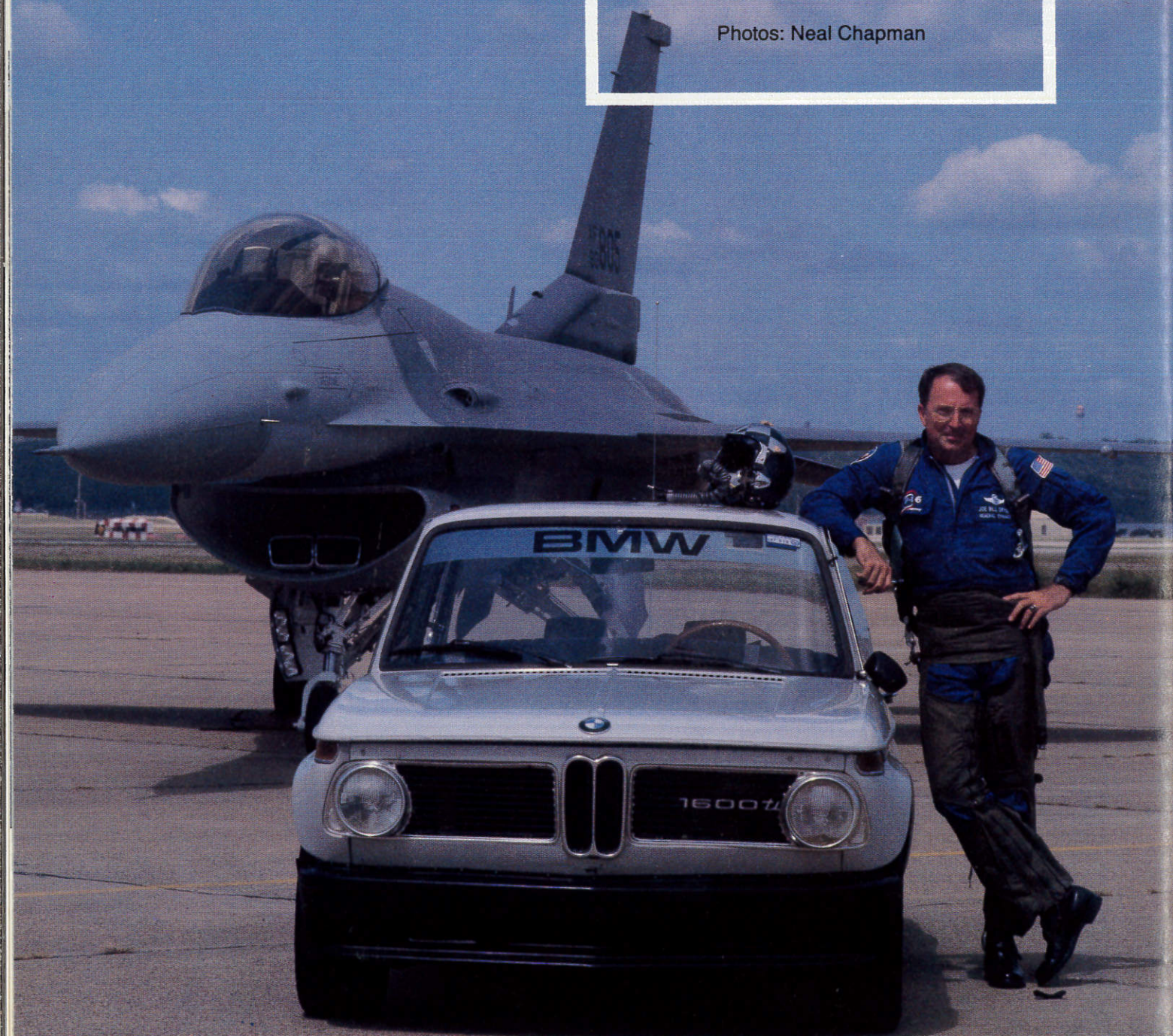


MY OTHER "CAR" IS AN F16!

By Joe Bill Dryden

Photos: Neal Chapman



My involvement with the BMW 1600ti began in the fall of 1968 when I deployed with my squadron from Holloman AFB (near Alamogordo, NM) to Spangdahlam Flugplatz, Germany. Not too long after we arrived I noticed a gray 1600ti for sale not too far from the base. At the time, I must admit that I did not know too much about BMWs but had noticed immediately that they were hard to keep in sight on any of the roads in Germany. I had looked at the car several times, but by the time I decided to get serious, one of my squadron mates had already put down a deposit for the car. Drat! . . . too late again.

However, all was not lost since not long after we all returned to the States the same squadron mate decided that he was going to sell the car. I finally ended up paying \$2500 cash for it. If that were only the case in today's market! But I digress.

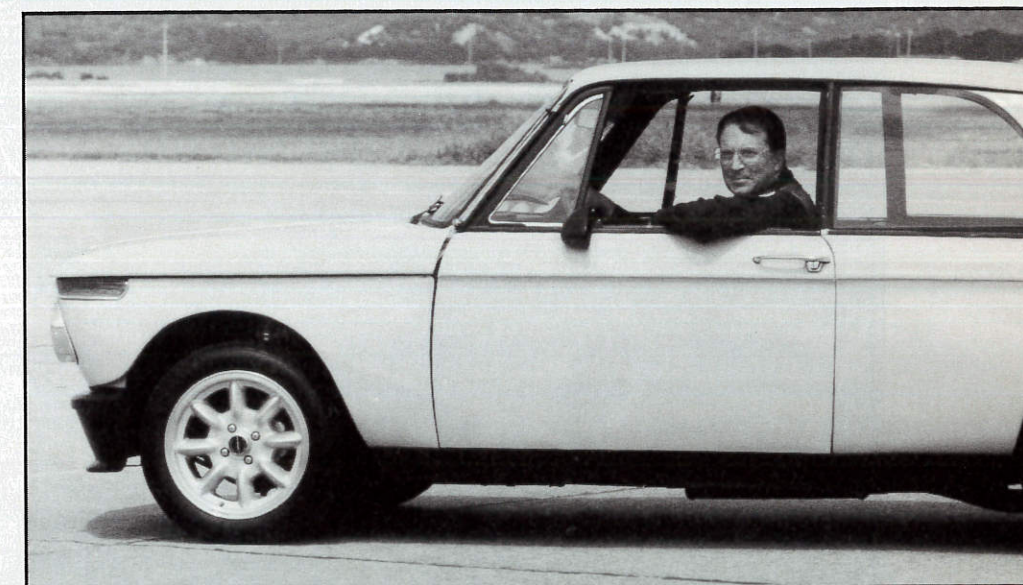
I have never been able to determine who the original German owner was or what he did with the car. I suspect that he had done at least some club racing in Germany since I noticed that the car had 5.5 inch width steel wheels and Koni shocks cinched down almost all the way. A tear-down a couple of years later revealed a notch higher compression and a 300 degree Alpina cam. (I would guess that the car was putting out about 118 to 120 hp.) Needless to say the car went like stink when compared to anything near its class and was an absolute joy to drive. As the 2002s started to catch on in the States it was lots of fun to watch the incredulous looks on their drivers' faces when they realized that their "pocket rocket" was perhaps having a little nozzle problem compared to this 1600ti. As you might expect not too many knew what a ti was about.

After I acquired the car, but before I decided to start any major mods, I ran across a great guy in LA who became a life-long friend. Carl Fredericks was one of the owner-operators of Crenshaw BMW in LA.

I was in the area and selected his name out of the phone book to stop by for some much needed maintenance. (Much more needed maintenance than I realized at the time.) As soon as he saw the car his first question was "Is it still a 1600ti?" as he ripped open the hood. Gee . . . someone who obviously knows BMWs. What a breath of fresh air.

I had stopped because it was obvious that the discs needed turning as they were really squealing under anything other than hard braking, and I had noticed a small tear in both axle joint boots next to the differential. Carl said he could fix me right up and to check back later that afternoon. I did so, and he informed me that after he

what used to be known as SCCA B Sedan. Further, as you might expect, the two small tears in the axle boots had allowed the lubrication to leak out, and the joints were nearly ruined. So he put one of his guys to work hand-polishing and rebuilding the joints. All this, plus a minor tune-up came to less than 100 dollars. I was impressed . . . and until Carl decided to get out of the BMW business and start his marine servicing operation I made a point of trying to have him do any major mods to the car. (It helped to spend a large part of my Air Force career stationed within a reasonable distance of LA.) And the list of mods has grown to quite some length.



had taken off so much metal to true the disc, he was concerned that any additional wear would mean the cylinders might be able to push the pads out of the caliper. So he disassembled them again and substituted

I don't care how fast you go . . . you can always go faster by being smooth.

some discs that he had taken off the 2002ti that was the basis for his race car. Carl did a nice job upholding the BMW name on the west coast in

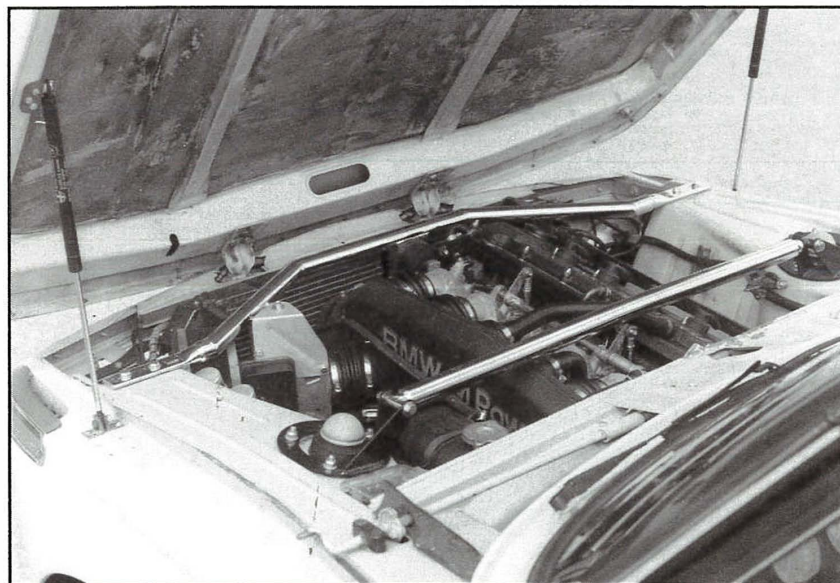
The first thing we did was to rebuild the engine using all the 1600ti accessories on a two liter short block. This was when the truth as to this "strong" 1600ti came to light. The engine still ran very well and only had about 85,000 miles on it, but those of you who know me will understand the continued desire for more speed. (A good guess at this point would be for about 135 hp.)

At the same time the suspension bushings were replaced and Bilsteins replaced the Konis. As you might expect, the 1600ti head restricted the top end power, but the mid range was really nice and made for a great

autocross car when competing against other "streetable" cars. This set-up lasted for a few tens of thousands of miles before the next major change came about.

We went to a full-up two liter engine. The Solex carbs were well worn by this time so a pair of Weber 45DCOE's were affixed using the old manifolds. A cam of about 294 degree duration was installed along with a set of tube headers and a generally good detailed engine build completed the power plant. (My guess now would be in the 155-160 hp range.) A set of Alpina flares were installed to allow the use of 13x7 inch American mags to be installed. I have never liked the

drums from an early model 2800CS went on the rear. The space taken up by the camber plates raised the front of the car so 2002ti springs cut about a coil went in the front and the rears came from a 2000ti sedan also cut about one coil. The aluminum cam cover was polished and the old original 1600ti air cleaner was chrome plated to brighten up the engine compartment. About this time I came across a close ratio 5 speed, so that was installed. To my mind this is the greatest single change I ever made to the car. I always had the right gear for the approaching corner. The big gap between the second and third gear on the four speed was eliminated. The



overall looks of the Alpinas on the 2002 body as the radius in the front and rear are different and the rears are too obviously "flared." But this was all that was available to get the clearance we needed at the time. Camber plates on the front occurred about this time. We decided to try to make the car as fast as possible by mixing and matching (to the extent possible) only BMW parts from the other cars the factory produced.

2002ti struts were installed in the front to get the bigger spindles, and the solid European 2002ti disc drilled axially went on the front. The

smaller rpm spread from gear to gear made it much easier to shift smooth — up or down. I don't care how fast you go . . . you can always

Those of you who know me will understand the continued desire for more speeeeed.

go faster by being smooth. The better gearing and more power allowed the rear axle ratio to be changed to a 3.64 from the original 3.91.

The usual cooling problem in Southern California was starting to show up, so a custom, larger, three row radiator was installed. The battery went into the trunk along with an Alpina 100 liter gas tank. The latter was a godsend as it was installed just before the first big "gas crunch" and sure did make it easier to get back and forth to Edwards AFB where I was stationed at this time.

Panasport 13x7 wheels replaced the first American mags and the new wheels looked better and were lighter.

At about this point one of the other club members in the LA area turned up with a nice 2002 in which he had installed a 2300cc six from a wrecked 323i. Huummmmm?

"Carl? What do we need to do to install the same?"

"I don't like the small size of the crank journals in the new engine."

"What would you suggest?"

"Well I have a new, complete, '77 530i engine in the crate up stairs."

More Huummmmm. "Let's do it."

Now is where the car really gets fast. Carl really came up with some good ideas to make this work. First, twelve centimeters were cut out of the drive shaft and the transmission was set back that amount. The bulkhead that the radiator mounts to was cut out of the car. As you might imagine, the frame torsional rigidity went to hell, so the stub frame was extended to just behind the sheet metal with additional steel. Two aluminum blocks about an inch and a half deep were affixed for a spacer and then an aluminum strap about three-eighths of an inch thick was run between the two frame rails. This ties the front of the car together and also serves as the bottom mount for the radiator. The top, inside of the front fenders where the bulkhead was removed, has doublers installed and was then tapped and a mild steel tube was bolted across after the engine was installed.

The most tricky part of the



PREPARATION OF THE F1600

By Ray Korman

Our goal was to be sure the car would handle as well as accelerate. For best front/rear weight ratio the engine was mounted as far back as possible. The added weight of the six cylinder gear box and differential aided front/rear balance. Special attention was directed to chassis reinforcement and suspension capability to handle the increased weight and torque. The end result was beyond our imagination. The car "hooked up" and came off corners on full throttle with no inside wheel hop or spinning. The car cornered and braked as awesomely as it accelerated. We estimated around 9:1 Power/Weight ratio.

ENGINE: Stock M6 engine with complete original M6 wiring harness, and ECU modified with Korman H.P. computer chip. Fabricated special engine mounts. M6 headers, slightly modified to fit, HPC thermal barrier ceramic coated. Oil Pan modified for front sub-frame clearance. Fabricated AFM mounting and installed hi flow ITG Air filter assembly.

ENGINE COOLING: Custom radiator, oil cooler with remote filter mount. Electric fan.

EXHAUST: Custom exhaust with dual racing-type muffler and dual pipe feeding into single 3 inch oval tail pipe, with stainless steel tip.

DIFFERENTIAL: BMW 530i, 3.45 Ratio, with 75% Limited Slip.

TRANSMISSION: Getrag 6 cylinder close-ratio 5 speed.

REAR AXLES: Custom high strength alloy axles by an INDY car axle builder.

CHASSIS: Major modifications to front radiator "cage" to move radiator forward to immediately behind the front grill, chromed front strut stress bar. Additional chromed tubular bar to support front corners of engine bay. Tubular bar reinforcement of front frame rails, reinforced lower front sub-frame. Major modifications to transmission tunnel to accept big 6 transmission. (Required raising roof of tunnel about 2.5 inches and fabrication of custom shifter housing and shortening of the center console.) Custom transmission mounts. Reinforced box section welded into floor of trunk to mount 6 cylinder type differential mount. Rear stress bar fabricated with additional steel tubing angled down to center

of trunk at reinforced differential mount area. Strengthened rear spring mounting area. Front sub-frame modified for oil pan clearance.

BRAKES: Front struts changed to Tii type with Alpina ventilated front rotors, Korman high performance brake pads, stainless steel braided brake lines, Korman rear brake conversion to 250mm drums with Korman H.P. brake linings. Tii Master cylinder and tii brake booster, tii front calipers, new rear wheel cylinders. A brake pressure regulator was installed to adjust front to rear brake bias.

REAR SUB-FRAME: Extensively modified and fabricated to accept 530i differential.

BODY: Korman Kevlar front hood, Zender wide fiberglass front and rear fenders, Zender front and rear spoilers. Original rear fender arch cut away for tire clearance.

INSTRUMENTS: VDO 160mph Speedometer with electronic inductive sending unit driven off driveshaft sensor. Oil pressure, oil temperature, and voltmeter.

BATTERY: Relocated to trunk.

MAINTENANCE: Included all new suspension bushings, new wheel bearings front and rear, new pedal assembly bushings, new gear shifter bushings, rebuilt CV joints, new hardened rear stub axles, new steering track rod assembly, new clutch master and slave units.

SUSPENSION: Suspension greatly strengthened with chromed 2.5" diameter racing springs in a "streetable" rate, custom valved front shocks with aluminum threaded sleeves for ride height adjustment. Threaded adjustable aluminum bodied coil-over rear shock/spring assembly. Korman 22mm front anti-sway bar, 19mm adjustable rear. Rod end type adjustable sway-bar links. Adjustable front upper camber plates, lower camber spacer plates. Rear sub-frame modified with adjustable camber and adjustable toe-in assemblies. Rear trailing arms reinforced.

WHEELS & TIRES: Panasport special offset 15" x 7" rims with BFGoodrich Comp TA3 radials in "R" (racing) compound. Front: 205/50ZR15, Rear: 225/50ZR15. Special alloy racing wheel studs.

conversion involved the clutch linkage. When we went to the close ratio 5 speed, the original 1600ti mechanical clutch was replaced with a 2002 hydraulic one. Now a clearance problem cropped up when the transmission was set back. The original hydraulic slave cylinder was mounted external to the exterior dimensions of the bell housing. The clearance problem occurs against the transmission tunnel at the pivot point for the accelerator. Carl came up with a great solution. The front of

the later model 320i transmission carries the slave cylinder internal to

Remember . . . you can never have too much power!

the exterior dimensions of the bell housing. So . . . the front half of a 320i transmission case was grafted on to the back half of the five-speed gear box from which 250 thousandths

had been milled off. It worked great. The engine was detailed, the connecting rods lightened and the cam retarded four degrees from stock to push the power band up to take advantage of the close ratio gearbox. (The horsepower is now probably in the 185-190 range but needless to say the torque is way up!)

The exhaust system is enlarged and a muffler from a '63 Corvair Turbo Spyder was installed along with an Ansa muffler tip. The resultant sound is truly beautiful . . . and the

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car really accelerates. Talk about fun! I'm sure that several Porsche service managers have all come up with "But Mr. Smith, the car is running exactly as it is supposed to." This after some innocent looking, little gray two door sedan has sucked their headlights out at the exit of about a 70 mile an hour corner on the Angel's Crest or Angel's Forest highway above LA.

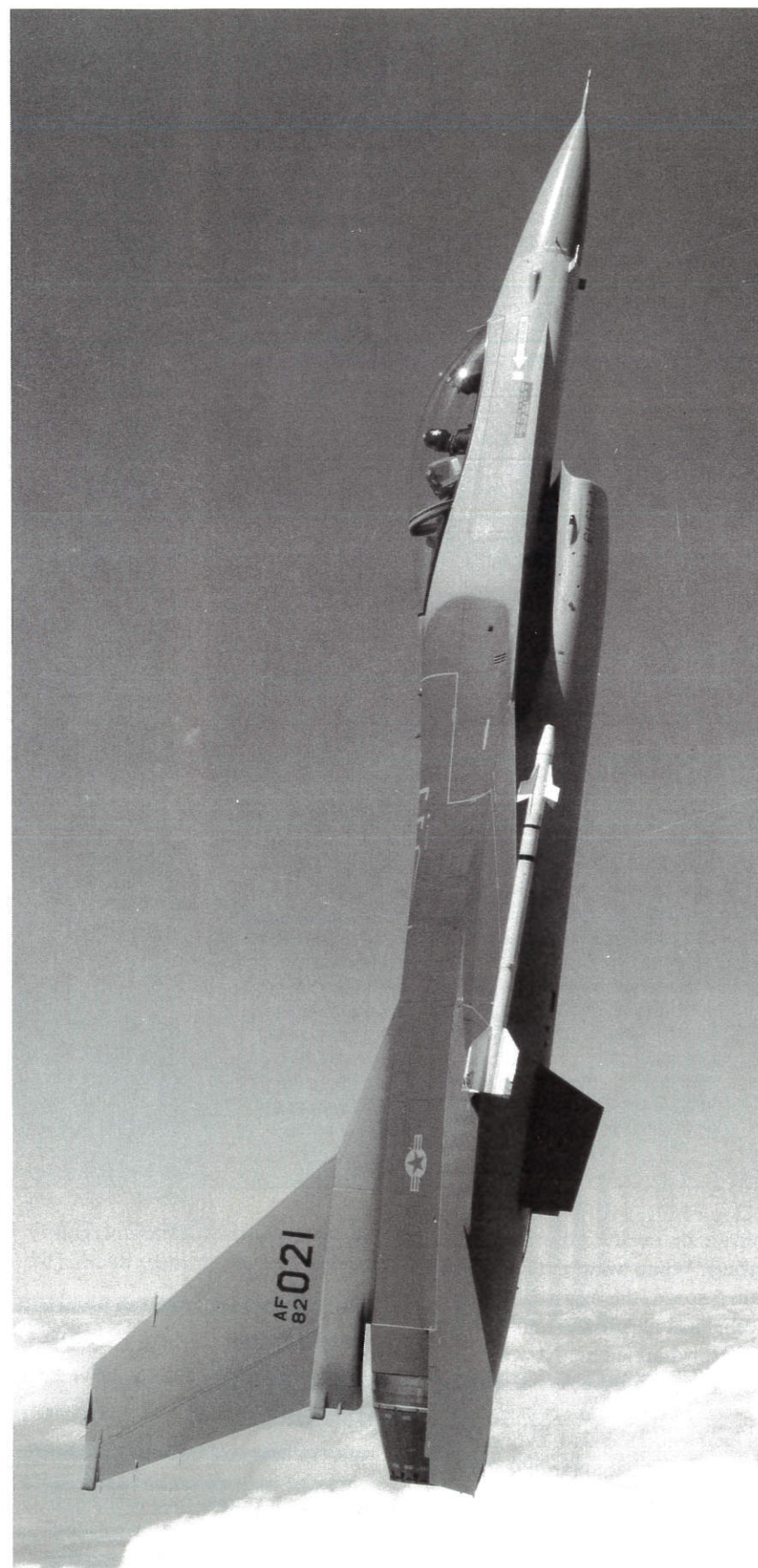
This fun lasted for several years, but like all mechanical things it began to get a little tired, although all the essentially 2002 level parts have handled the additional power all this time without a whimper. But the engine was starting to show its age and finally the injector plenum split. (Remember that problem with the early injected big sixes?)

I had met Ray Korman at one of the Oktoberfests in the past and had already had him build me a really nice Stage Two (plus) engine for the '73 2002 that I also own. I was pleased with that operation so when it became obvious that some major maintenance was due on the 1600ti, I gave Ray a call and trailered the car to Greensboro. We chatted a little and I left after having given Ray instructions to "freshen up" the suspension and brakes a little and to rebuild the engine. And while he was at it, to bring it out to 3.5 liters at about the "Stage One" level he advertises in his catalog. (Remember — you can never have too much power.)

The first time I talked to Ray on the phone after returning home, Ray suggested that as long as I wanted to take it out to 3.5 liters why not install an M5 or M6 engine. More and bigger Huummmm! As you'd guess the hook was set and that is where the car is today. I'll let Ray describe the present "level" the car is on. (See box.)



Ed. note: Joe Bill Dryden was killed in an accident recently, while testing a new F16. He gave us this article several months ago. See story by Leo Newland.



KORMAN

TURBO 325



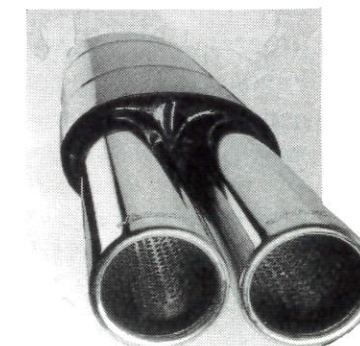
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